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INSTALLATION RESTORATION PROGRAM

INFORMAL TECHNICAL INFORMATION REPORT FOR UNDERGROUND STORAGE TANK SITES

EGLIN AIR FORCE BASE FLORIDA

ENGINEERING-SCIENCE ATLANTA, GEORGIA

APRIL 1992

PREPARED FOR

HEADQUARTERS AIR FORCE SYSTEMS COMMAND COMMAND CIVIL ENGINEER (HQS AFSC/DEV) ANDREWS AIR FORCE BASE, MARYLAND 20334-5000

UNITED STATES AIR FORCE
AIR FORCE CENTER FOR ENVIRONMENTAL EXCELLENCE (AFCEE)
ENVIRONMENTAL RESTORATION DIVISION (ESR)
3ROOKS AIR FORCE BASE, TEXAS 78235-5000





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INSTALLATION RESTORATION PROGRAM

INFORMAL TECHNICAL INFORMATION REPORT FOR UNDERGROUND STORAGE TANK SITES

AIR FORCE SYSTEMS COMMAND EGLIN AIR FORCE BASE, FLORIDA

APRIL 10, 1992

PREPARED BY

ENGINEERING-SCIENCE, INC. 57 EXECUTIVE PARK SOUTH, N.E. SUITE 590 ATLANTA, GEORGIA 30329

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2nd Lt. RODNEY HAMMEL

AIR FORCE CENTER FOR ENVIRONMENTAL EXCELLENCE (AFCEE)
ENVIRONMENTAL RESTORATION DIVISION (ESR)
BROOKS AIR FORCE BASE, TEXAS 78235-5000

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As part of an on-going Insta	llation Restorat:	ion Program	(IRP) at Egl	in AFB, Flo	rida ten
Underground Storage Tank Site present in the groundwater as	t these sites.	Previous reme	ediation eff	orts at the	ese sites
have included removal of the	tanks and off-s	ite bioremedi	iation of co	ntaminated	soils. This
is an Informal Technical Info				Lytical res	ults and
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PREFACE

This Informal Technical Information Report presents the analytical results and pertinent data associated with the Underground Storage Tank Sites at Eglin AFB, Florida.

Engineering-Science, Inc., Atlanta, Georgia is contractor for this work. Mr. Ola A. Awosika, P.G., will be the primary responsible scientist performing the work.

The ITIR commences on December 1, 1991 and continues through April 10, 1992.

2nd Lt. Rodney Hamel, United States Air Force AFCEE/ESR, Brooks AFB, Texas is the Technical Program Manager.

Lew Bab Birou 1

Approved:

Contract Program Manager

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EGLIN AFB UST ITIR

1.0 INTRODUCTION

Engineering-Science (ES) has prepared this letter report to present the results of the environmental sampling work conducted at eight (8) Underground Storage Tank (UST) sites at Eglin AFB, Florida. The locations of these UST sites are depicted in Figures 1 through 8. The results of this investigation are contained in this report and are organized as follows:

- Background
- Sampling Effort
- Analytical Results
- Validated Data
- Recommendation

2.0 BACKGROUND

In 1989, CH2MHill was contracted to compile a comprehensive list of old and inactive USTs at Eglin AFB. In 1990/1991, EA Engineering, Science, and Technology, Inc. were chosen to perform a removal and disposal effort in conjunction with remediation of contaminated soils as necessary. During the course of EA's removal actions, ten UST sites required some degree of soil remediation in accordance with the Federal Department of Environmental Regulation (FDER) criteria. Soil pile bioremediation methods were implemented at an offsite location in six of these cases where OVA readings exceeded 500 ppm or more (Figure 1). Local soils from a borrow pit were used to backfill the holes. The four other sites displayed OVA readings between 80 and 140 ppm during excavation. Soils for these sites were allowed to aerate naturally onsite and were reused as backfill when the OVA readings had diminished. Information pertinent to the tank removal and soil remediation efforts are summarized in Table 1.

The objective of the current investigation at the UST sites is to comply with FDER assessment requirements by determining if contamination is present in the groundwater and to quantify the extent of the contamination if identified. This objective was accomplished through drilling of soil borings, installation of monitoring wells, collection of groundwater samples for chemical analyses, validation of analytical results, and the interpretation and analysis of the validated data.

3.0 GROUNDWATER INVESTIGATION AND RESULTS

3.1 Field Effort

This investigation effort was originally intended for the ten sites requiring remediation as discussed above. However, at the request of the Base, two sites (near Building 501 at Eglin Main and 90219 at Hurlburt Field) were deleted from this investigation due to the presence of monitoring wells onsite from previous groundwater investigations. The field effort at each individual UST site consisted of drilling, installation, development, and sampling of one monitoring well for physical and chemical analyses. The specific location of each well was selected in the field. An attempt was made to locate each well either within the previously excavated area or a nearby downgradient location, depending on site conditions (for example, presence of overhead power lines, communication lines, and trees). An estimate of the flow direction at each site was made based on surrounding topography, proximity of nearby streams, and professional judgment. Boreholes were made to Soil samples were then collected for evaluation of accommodate each well. lithological attributes and any physical evidence of contamination. Organic vapors readings were taken with an HNu during the drilling effort. Drilling records and other information pertinent to the drilling effort are presented in Appendix A. None of the wells installed were surveyed since a potentiometric map for each site could not be developed using data from only one well.

The field work was conducted on February 3 through February 13, 1992 and on February 19 through February 21, 1992. Eight groundwater samples were collected for chemical analysis. All samples were sent to Southwest Laboratory for analyses. The analyses requested included total petroleum hydrocarbons, polynuclear aromatic hydrocarbons, 1,2-dichloroethane, ethylene dibromide, lead, BTEX, and MTBE as required by FDER.

3.2 Analytical Results

A summary of the analytical results are presented in Tables 2 through 7. Tables 3 through 6 are in accordance with reporting requirements in the IRP Handbook.

Ethylene dibromide and 1,2-dichloroethane were not detected in groundwater samples collected from any of the UST sites. Total petroleum hydrocarbons were reported in samples from MW981-1 and MW9990-1 at levels 600 μ g/L and 1600 μ g/L, respectively. No polynuclear aromatic hydrocarbons, with the exception of fluoranthene in MW3021-1 at 2.0 μ g/L, were identified in groundwater samples. Lead in a sample from MW792-1 at a concentration of 142 μ g/L exceeded the Florida MCL of 50 μ g/L. A low concentration of toluene was reported in the MW3021-1 sample from the BTEX analyses but the second column run did not provide confirmation. All eight samples were free of detectable MTBE contamination. A copy of the original raw data forms provided by the laboratory are included in Appendix B.

3.3 Validated Data

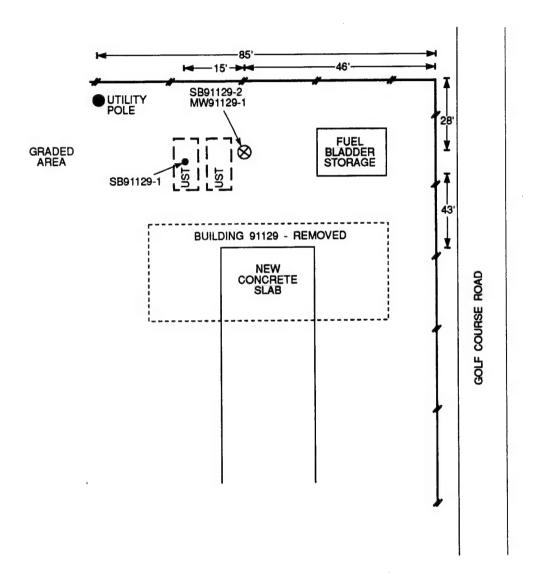
The analytical data, preceded by a comprehensive review of quality assurance and quality control (QA/QC) qualifiers, is presented in Appendix B.

The lead results from the MW4204 sample and the matrix spike are considered estimated due to a low percent recovery. Xylenes at a concentration of $0.7 \mu g/L$ were detected in the equipment rinsate UST-ER2 but were not confirmed due to the absence of a second column analyses. With the exception of the sample from MW9990-1, all polynuclear aromatic hydrocarbon analyses exceeded the established holding time criteria for sample extraction. Therefore, these results are estimated at the laboratory method detection limits.

3.4 Recommendation

Based on the sampling results, a second groundwater sample should be collected from MW792-1 to verify the presence of lead contamination. The remaining seven sites did not show sufficient evidence of groundwater contamination attributable to the USTs to warrant further characterization. Therefore, no further investigations are recommended for these sites.

UST SITE BUILDING 91129 - HURLBURT FIELD EGLIN AFB, FLORIDA





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EXPLANATION

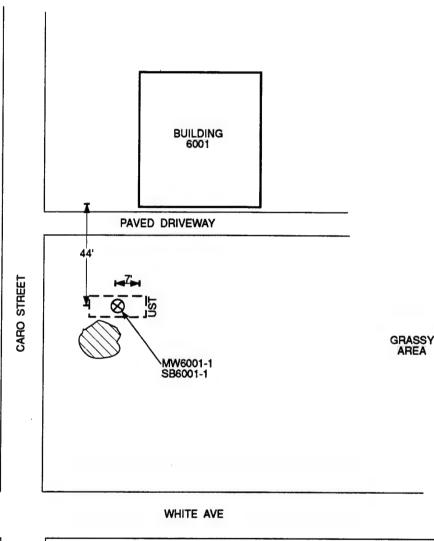
Approximate location of tanks before removal

Chain-link fence

Monitoring well

Soil boring location

UST SITE BUILDING 6001 - AUXILIARY FIELD #6 EGLIN AFB, FLORIDA





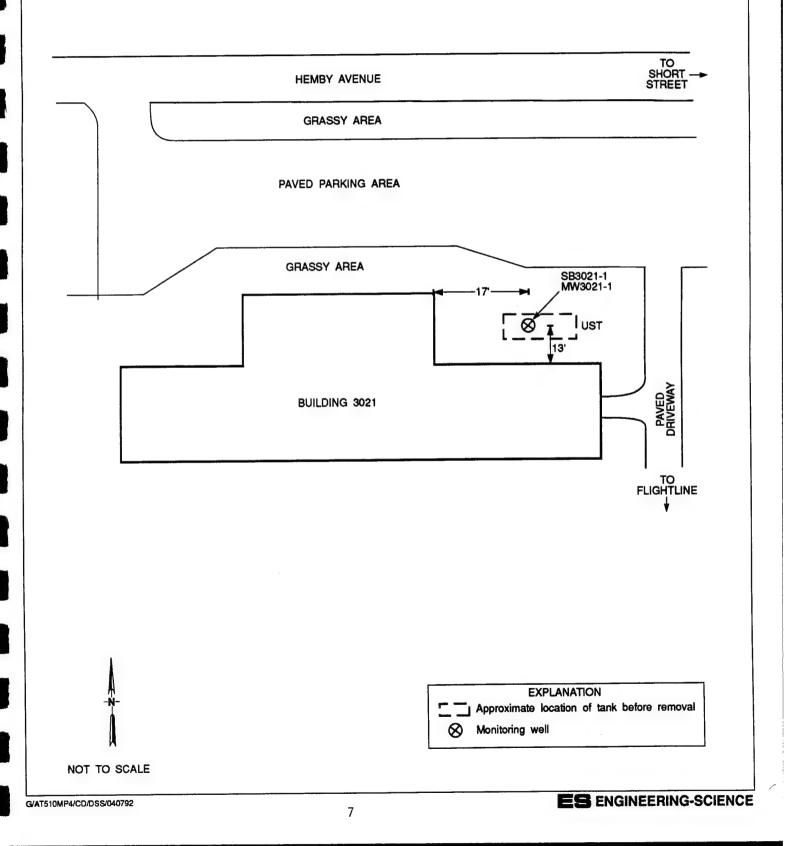
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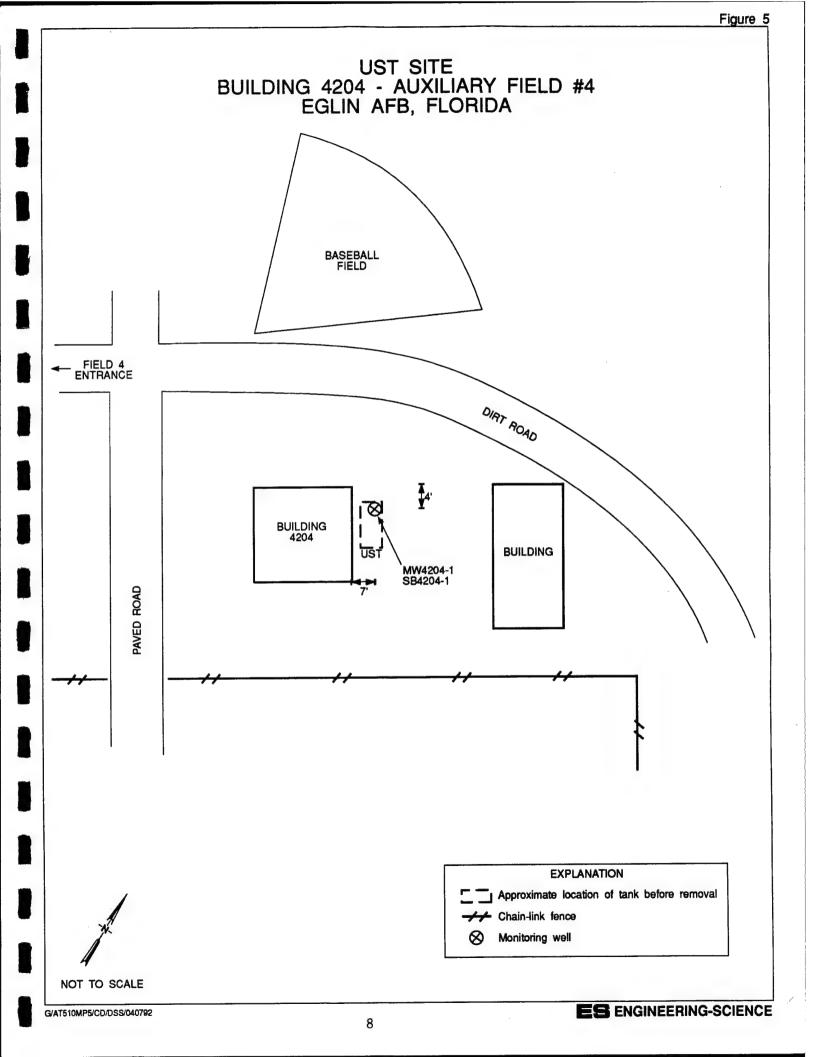
____ Approximate location of tanks before removal

Soil cuttings

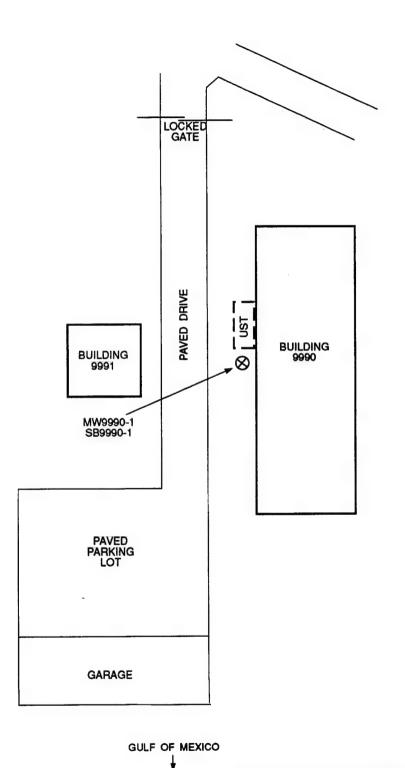
Monitoring well

UST SITE BUILDING 3021 - AUXILIARY FIELD #3 (Duke) EGLIN AFB, FLORIDA





UST SITE BUILDING 9990 - D3 COAST GUARD FACILITY EGLIN AFB, FLORIDA



NOT TO SCALE

EXPLANATION

Approximate location of tank before removal

Monitoring well

TABLE 1 UNDERGROUND STORAGE TANK REMOVAL DATA EGLIN AFB

UST Number	Size (gallons)	Storage Use	Maximum OVA Reading during Excavation (ppm)	Maximum OVA Reading during Well Installation (ppm)
91129-2	10,000	Diesel	104	200
6001	1,000	Diesel	1000+	220
6024	500	Diesel	1000+	600
3021	500	Diesel	80	500
4204	55	Gasoline	1000+	280
792	1,000	Diesel	1000+	34
981-2	5,000	Diesel	1000+	600
9990	1,000	Diesel	82	0

TABLE 2
PHYSICAL PARAMETERS
AS MEASURED PRIOR TO SAMPLING
UST SITES
EGLIN AFB

Site Number	Well Number	pН	Conductivity umhos/cm	Temperature ° C	Sampling Date
91129	MW91129-1	8.63	850	16.2	92/2/19
6001	MW6001-1	8.95	200	21.9	92/2/19
6024	MW6024-1	7.73	30	21.8	92/2/19
3021	MW3021-1	7.83	30	18.2	92/2/20
4204	MW4204-1	8.16	60	20.7	92/2/19
792	MW792-1	9.30	230	17.0	92/2/20
981	MW981-1	9.10	170	20.4	92/2/20
9990	MW9990-1	8.85	460	15.8	92/2/21

ANALYTICAL RESULTS EGLIN AFB **UST SITES** TABLE 3

					[Site]	UST	UST	UST
					[Other Info]	Water	Water	Water
			ARAR (1)	t (1)	[Field #]	MW3021-1*	MW4204-1	MW4204-1 MSD (2)
Parameter	Method	Units	Federal	State	[Lab #]	8803.01	8794.06	8794.07
1,2-Dichloroethane	EPA 601	J/8n	8	60		Q.	QN	18.4
Ethylene Dibromide	EPA 504.1	ug/L	0.05	0.02		ND ND	QN	1.8
Petroleum Hydrocarbons	EPA 418.1	J/8n	•	•		ND	QN	28,000
Lead	EPA 239.2	J/gu	•	20		QN	6.9 J	8.0 J
Benzene	EPA 602	ug/L	5	1		QN	QN	10.1
Toluene	EPA 602	Ug/L	1000			0.5 JN	QX	9.5
Ethylbenzene	EPA 602	ug/L	700	ŀ		ND	QN	8.6
Xylenes	EPA 602	ug/L	10,000	,		QN	QN	30.4
МТВЕ	EPA 602	ug/L		•		QN	QN	42.4
Polynuclear Aromatic Hydrocarbons Fluoranthene	EPA 610	ug/L	ı	1		1.0 UJ 2.0 J	1.0 UJ 1.0 UJ	VARIES 11.5

(1) - Applicable or Relevant and Appropriate Requirements (2) - Matrix spike or matrix spike duplicate (3) - Duplicate of MW91129-1 J - Estimated value

N - Tentative identification

ND - Not detected

* - Mistakenly labeled as MW3024-1 on laboratory data sheets for Ethylene Dibromide analysis NA - Not analyzed

UI - Due to holding times exceeding criteria for extractions, the method detection limits are estimated and all nondetections are qualified as estimated and presented with the detection limit

ANALYTICAL RESULTS TABLE 3 (Cont'd) **EGLIN AFB UST SITES**

			ARAR (1)	(()	[Other Info] [Field #]	Water WW4204-1 MS (2)	Water MW6001-1	Water MW6024-1
Parameter	Method	Units	Federal	State	[Lab #]	8794.08	8794.05	8794.04
1,2-Dichloroethane	EPA 601	J/8n	\$	æ		17.2	ND	ND
Ethylene Dibromide	EPA 504.1	J/Bn	0.05	0.02		1.62	ND	QN
Petroleum Hydrocarbons	EPA 418.1	ng/L		•		25,000	ND	QN
Lead 15	EPA 239.2	J/Bn		20		16.5 J	ND	10.2
Benzene	EPA 602	J/Bn	8	1		6.6	QN	QN
Toluene	EPA 602	ug/L	1000	•		9.3	QN	QN
Ethylbenzene	EPA 602	T/gn	700			9.4	QN	QN
Xylenes	EPA 602	ug/L	10,000	•		29.4	QN	QN
MTBE	EPA 602	ug/L	•			44.6	QN	ND
Polynuclear Aromatic Hydrocarbons	EPA 610	ng/L	•	•		VARIES	1.0 UJ	1.0 UJ

(1) - Applicable or Relevant and Appropriate Requirements
(2) - Matrix spike or matrix spike duplicate
(3) - Duplicate of MW91129-1
J - Estimated value
N - Tentative identification
ND - Not detected
NA - Not analyzed
UJ - Due to holding times exceeding criteria for extractions, the method detection limits are estimated and all nondetections are qualified as estimated and presented with the detection limit

ANALYTICAL RESULTS TABLE 3 (Cont'd) EGLIN AFB **UST SITES**

					[Site]	UST	UST	UST
			ARAR (1)	9	[Other Info] [Field #]	Water MW792-1	Water MW91129-1	Water MW91601-1 (3)
Parameter	Method	Units	Federal	State	[Lab#]	8803.04	8794.01	8794.02
1,2-Dichloroethane	EPA 601	J/gu	'n	ю		N	QN	QN
Ethylene Dibromide	EPA 504.1	ug/L	0.05	0.02		ND	ND	QN
Petroleum Hydrocarbons	EPA 418.1	ug/L	•	ı		Q	QN	QN
Lead	EPA 239.2	ug/L	•	50		142	26.6	21.4
Benzene	EPA 602	ng/L	٧,	-		QX	QN	QN
Toluene	EPA 602	ug/L	1000	•		Q	ND	QN
Ethylbenzene	EPA 602	ug/L	700	•		Q.	QN	QN
Xylenes	EPA 602	ug/L	10,000	•		Q	QN	QN
MTBE	EPA 602	ng/L	•	1		Q.	QN	QN
Polynuclear Aromatic Hydrocarbons	EPA 610	J/Bn	•			1.0 UJ	1.0 UJ	1.0 UJ

^{(1) -} Applicable or Relevant and Appropriate Requirements (2) - Matrix spike or matrix spike duplicate (3) - Duplicate of MW91129-1 J - Estimated value

N - Tentative identification
ND - Not detected
NA - Not analyzed
UJ - Due to holding times exceeding criteria for extractions, the method detection limits are estimated and all nondetections are qualified as estimated and presented with the detection limit

ANALYTICAL RESULTS TABLE 3 (Cont'd) EGLIN AFB **UST SITTES**

					[Site]	UST	UST	UST
			ARAR (1)	t(I)	[Other Info] [Field #]	Water MW981-1	Water MW9990-1	Water UST-ER1
Parameter	Method	Units	Federal	State	[Lab #]	8803.03	8819.01	8794.1
1,2-Dichloroethane	EPA 601	ug/L	٧.	en.		QN	ND	ND
Ethylene Dibromide	EPA 504.1	ug/L	0.05	0.02		QN	QŃ	QN QN
Petroleum Hydrocarbons	EPA 418.1	ug/L		•		009	1600	Q.
Lead	EPA 239.2	ng/L	,	90		5.4	QN	QN
Benzene	EPA 602	ng/L	٧.	1		ND	Ð	QN
Toluene	EPA 602	$^{\mathrm{ng/L}}$	1000			ND	QN	QN.
Ethylbenzene	EPA 602	ug/L	700	•		ND	QN	QN
Xylenes	EPA 602	J/gu	10,000	1		ND	QN	QN
MTBE	EPA 602	ug/L	1	ı		ND	QN	ND
Polynuclear Aromatic Hydrocarbons	EPA 610	ng/L	•	•		1.0 UJ	ND	1.0 UJ

^{(1) -} Applicable or Relevant and Appropriate Requirements (2) - Matrix spike or matrix spike duplicate (3) - Duplicate of MW91129-1 J - Estimated value

N - Tentative identification
ND - Not detected
NA - Not analyzed
UJ - Due to holding times exceeding criteria for extractions, the method detection limits are estimated and all nondetections are qualified as estimated and presented with the detection limit

ANALYTICAL RESULTS TABLE 3 (Cont'd) EGLIN AFB **UST SITTES**

Action Parameter Method Units Federal State (Johher Info) Water Water Water State (Joher Info) Water Water Water State (Jah 4) (1945 4) (1947 4) (1947 4) (1948 4) (1						[Site]	UST	UST
Parameter Method Units Federal State ILab #1 USF-ER2 chlorocthane EPA 601 ug/L 5 3 ND me Ditromide EPA 504.1 ug/L 0.05 0.02 ND eum Hydrocarbons EPA 418.1 ug/L - 50 ND ne EPA 602 ug/L 5 1 ND ses ug/L 1000 - ND es EPA 602 ug/L 10,000 - ND es EPA 602 ug/L 10,000 - ND es EPA 602 ug/L 10,000 - 0,71N es Ug/L 10,000 - 0,71N es Ug/L - - 0,71N es Ug/L 10,000 - 0,71N es Ug/L - - 0,71N es Ug/L - - 0,71N es <t< th=""><th></th><th></th><th></th><th></th><th></th><th>[Other Info]</th><th>Water</th><th>Water</th></t<>						[Other Info]	Water	Water
Parameter Method Units Federal State (Lab #) 8803.65 cidlocrethane EPA 601 ug/L 5 3 ND ND cem Ditrounide EPA 504.1 ug/L 0.05 0.02 ND ND cem Hydrocarbons EPA 418.1 ug/L - 50 ND ND ne EPA 602 ug/L 1000 - ND ND cerzere EPA 602 ug/L 10,000 - ND ND ces EPA 602 ug/L 10,000 - ND ND ces EPA 602 ug/L 10,000 - ND ND ces EPA 602 ug/L - - ND				ARAR	(I)	[Field #]	UST-ER2	UST-TB1
cholorochanet EPA 601 ug/L 5 3 ND are Divomidet EPA 504.1 ug/L 0.05 0.02 ND cum Hydrocarbons EPA 418.1 ug/L - - - ND are Hydrocarbons EPA 612 ug/L 5 1 ND ND are Experience EPA 602 ug/L 700 - ND ND est EPA 602 ug/L 10,000 - ND ND est EPA 602 ug/L - - ND ND est EPA 602 ug/L - - - ND est EPA 602 ug/L - - - ND ucher Aromatic Hydrocarbons EPA 602 ug/L - - - - -	Parameter	Method	Units	Federal		[Lab #]	8803.05	8794.03
ment Hydrocarbonists EPA 418.1 ug/L - - - - ND eum Hydrocarbonists EPA 239.2 ug/L - - - - ND net EPA 602 ug/L 5 1 ND ND seazene EPA 602 ug/L 700 - - ND est ug/L 10,000 - - ND set ug/L - - - ND uclear Aromatic Hydrocarbons EPA 610 ug/L - - - - -	1,2-Dichloroethane	EPA 601	J/gu	ν.	3		QN	QV
eum Hydrocarbons EPA 418.1 ug/L - - - ND net EPA 622 ug/L 5 1 ND ND net EPA 602 ug/L 1000 - ND ND scazene EPA 602 ug/L 700 - ND ND st EPA 602 ug/L 10,000 - - ND B EPA 602 ug/L - - - ND B EPA 602 ug/L - - - ND B BA 602 ug/L - - - - - B BA 602 ug/L - - - - - - B B - - - - - - - B B - - - - - - - - B - - -	Ethylene Dibromide	EPA 504.1	ng/L	0.05	0.02		ND	QX
metatolemental metatolementa	Petroleum Hydrocarbons	EPA 418.1	ug/L	•	•		QN	*QN
gane ug/L food - ND zene HPA 602 ug/L 700 - ND EA 602 ug/L 10,000 - ND EA 602 ug/L - - ND ear Aromatic Hydrocarbons EPA 610 ug/L - - ND	Lead	EPA 239.2	ug/L		20		QN	Ϋ́
gene ug/L 1000 - ND gene ug/L 700 - ND EA 602 ug/L 10,000 - 0.7 JN ear Aromatic Hydrocarbons EPA 610 ug/L - - ND ear Aromatic Hydrocarbons EPA 610 ug/L - - 1.0 UJ	Benzene	EPA 602	ng/L	٧.			QN	QN
zene BPA 602 ug/L 700 - ND BPA 602 ug/L 10,000 - 0.7 JN EPA 602 ug/L - - ND car Aromatic Hydrocarbons EPA 610 ug/L - - 1.0 UJ	Toluene	EPA 602	ng/L	1000	1		QN	QN
EPA 602 ug/L 10,000 - 0.7 JN EPA 602 ug/L - - ND car Aromatic Hydrocarbons EPA 610 ug/L - - 1.0 UJ	Ethylbenzene	EPA 602	ug/L	700	•		QN	QN
EPA 602 ug/L ND ND Slear Aromatic Hydrocarbons EPA 610 ug/L 1.0 UJ	Xylenes	EPA 602	ug/L	10,000			N1 7.0	QN ON
EPA 610 ug/L 1.0 UJ	MTBE	EPA 602	ug/L	,	•		ND	Đ.
	Polynuclear Aromatic Hydrocarbons	EPA 610	ug/L	•			1.0 UJ	NA

^{(1) -} Applicable or Relevant and Appropriate Requirements
(2) - Matrix spike or matrix spike duplicate
(3) - Duplicate of MW91129-1
* - Analysis performed but not requested
J - Estimated value
N - Tentative identification
ND - Not detected
NA - Not analyzed
UJ - Due to holding times exceeding criteria for extractions, the method detection limits are estimated and all nondetections are qualified as estimated and presented with the detection limit

ANALYTICAL RESULTS TABLE 3 (Cont'd) EGLIN AFB **UST SITES**

			ARAR (1)		[Site] [Other Info] [Field #]	UST Water UST-TB2	UST Water UST-TB3*
Parameter	Method	Units	Federal	State	[Lab #]	8803.02	8819.02
1,2-Dichloroethane	EPA 601	T/gu	٧,	3		Q.	QN
Ethylene Dibromide	EPA 504.1	ng/L	0.05	0.02		QN	QN
Petroleum Hydrocarbons	EPA 418.1	ug/L	ŧ	,		NA A	NA
of Fad	EPA 239.2	J/8n		50		NA	NA
Benzene	EPA 602	J/gn	٧٦	-		N O	QN
Toluene	EPA 602	ug/L	1000	1		ND	QN
Ethylbenzene	EPA 602	ng/L	700			QN	ND
Xylenes	EPA 602	ug/L	10,000	•		QN	ND
MTBE	EPA 602	ng/L	•			ND	ND
Polynuclear Aromatic Hydrocarbons	EPA 610	ug/L		1		NA	NA

^{(1) -} Applicable or Relevant and Appropriate Requirements
(2) - Matrix spike or matrix spike duplicate
(3) - Duplicate of MW91129-1
J - Estimated value
N - Tentative identification
ND - Not detected
NA - Not analyzed
* - Mistakenly labeled as MW91601 on laboratory data sheets for Ethylene Dibromide analysis

SAMPLE IDENTIFICATION CROSS-REFERENCE **EGLIN AFB UST SITES** TABLE 4

Sample Description	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water
) De																
Lab Batch ID	8803	8794	8794	8794	8794	8794	8803	8794	8794	8803	8819	8794	8803	8794	8803	8819
Laboratory ID	8803.01	8794.06	8794.07	8794.08	8794.05	8794.04	8803.04	8794.01	8794.02	8803.03	8819.01	8794.10	8803.05	8794.03	8803.02	8819.02
Field Batch ID	NA	NA	NA NA	NA	NA NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Field ID	MW3021-1 (3)	MW4204-1	MW4204-1 MSD (1)	MW4204-1 MS (2)	MW6001-1	MW6024-1	MW792-1	MW91129-1	MW91601-1 (5)	MW981-1	MW9990-1	UST-ER1	UST-ER2	UST-TB1	UST-TB2	UST-TB3 (4)
Site ID	UST	UST	UST	UST	UST	UST	UST	UST	UST	UST	UST	UST	UST	UST	UST	UST

^{(1) -} Matrix spike duplicate
(2) - Matrix spike
(3) - Mistakenly labeled as MW3024-1 on laboratory data sheets for Ethylene Dibromide analysis
(4) - Mistakenly labeled as MW91601 on laboratory data sheets for Ethylene Dibromide analysis
(5) - Duplicate of MW91129-1
NA - Not applicable
AT510/9231189/USTIDCRF.XL.S

SUMMARY OF EXTRACTION AND ANALYSIS DATES EGLIN AFB **UST SITTES** TABLE 5

		-	1,2-Dichloroethane - EPA 601	me - EPA 601						Ethylene Dibromide - EPA 504.1	ide - EPA 5	04.1			
Field ID	Lab ID#	Sampling Date	Extraction Date	Elapsed Time	Analysis Date	Elapsed Time		Lab ID#	Sampling Date	Extraction Date	Elapsed Time		Analysis Date	Elapsed	
MW3021-1 (3)	8803.01	2/20/92	AN	NA	2/24/92	4	days	8803.01	2/20/92	2/24/92	4	days	2/25/92	ν.	days
MW4204-1	8794.06	2/19/92	NA	NA	2/24/92	'n	days	8794.06	2/19/92	2/24/92	8	days	2/25/92	9	days
MW4204-1 MSD (1)	8794.07	2/19/92	NA	NA	2/24/92	ĸ	days	8794.07	2/19/92	NA	NA		2/25/92	9	days
MW4204-1 MS (2)	8794.08	2/19/92	NA	NA	2/24/92	'n	days	8794.08	2/19/92	NA	NA		2/25/92	9	days
MW6001-1	8794.05	2/19/92	NA	NA	2/24/92	'n	days	8794.05	2/19/92	2/24/92	ν,	days	2/25/92	9	days
MW6024-1	8794.04	2/19/92	NA	NA	2/24/92	'n	days	8794.04	2/19/92	2/24/92	2	days	2/25/92	9	days
MW792-1	8803.04	2/20/92	NA	NA	2/24/92	4	days	8803.04	2/20/92	2/24/92	4	days	2/25/92	ς.	days
MW91129-1	8794.01	2/19/92	NA	AN	2/24/92	'n	days	8794.01	2/19/92	2/24/92	2	days	2/24/92	5	days
MW91601-1 (5)	8794.02	2/19/92	N N	NA	2/24/92	'n	days	8794.02	2/19/92	2/24/92	ς.	days	2/24/92	5	days
MW981-1	8803.03	2/20/92	NA	NA A	2/24/92	4	days	8803.03	2/20/92	2/24/92	4	days	2/25/92	2	days
MW9990-1	8819.01	2/21/92	NA	NA	2/26/92	5	days	8819.01	2/21/92	2/24/92	3	days	2/25/92	4	days
UST-ER1	8794.10	2/19/92	NA	NA	2/24/92	S	days	8794.10	2/19/92	2/24/92	5	days	2/25/92	9	days
UST-ER2	8803.05	2/20/92	NA	NA	2/24/92	4	days	8803.05	2/20/92	2/24/92	4	days	2/25/92	ν.	days
UST-TB1	8794.03	2/19/92	NA	NA	2/24/92	5	days	8794.03	2/19/92	2/24/92	5	days	2/24/92	8	days
UST-TB2	8803.02	2/20/92	NA	NA	2/24/92	4	days	8803.02	2/20/92	2/24/92	4	days	2/25/92	8	days
UST-TB3 (4)	8819.02	2/21/92	NA	NA	2/26/92	۶	days	8819.02	2/21/92	2/24/92	3	days	2/25/92	4	days

Matrix spike duplicate
 - Matrix spike
 - Mistakenly labeled as MW3024-1 on laboratory data sheets for Ethylene Dibromide analysis
 - Mistakenly labeled as MW91601 on laboratory data sheets for Ethylene Dibromide analysis
 - Duplicate of MW91129-1
 NA - Not applicableNot analyzed

SUMMARY OF EXTRACTION AND ANALYSIS DATES TABLE 5 (Cont'd) **EGLIN AFB UST SITTES**

		Petr	Petroleum Hydrocarbons - EPA 418.1	rbons - EPA 4]	18.1					Lead · EPA 239.2	A 239.2			
Field ID	Lab ID#	Sampling Date	Extraction Date	Elapsed Time	Analysis Date	Elapsed		Lab ID#	Sampling Date	Extraction Date	Elapsed Time	Analysis Date	Elapsed Time	
MW3021-1 (3)	8803.01	2/20/92	NA	NA	2/25/92	5	days	8803.01	2/20/92	NA	Y Z	3/4/92	13	days
MW4204-1	8794.06	2/19/92	NA	NA	2/25/92	9	days	8794.06	2/19/92	NA A	Z A	3/4/92	14	days
MW4204-1 MSD (1)	8794.07	2/19/92	NA	NA.	2/25/92	9	days	8794.07	2/19/92	NA	YZ Y	3/4/92	14	days
MW4204-1 MS (2)	8794.08	2/19/92	NA	NA	2/25/92	9	days	8794.08	2/19/92	NA	NA A	3/4/92	14	days
MW6001-1	8794.05	2/19/92	NA	NA	2/25/92	9	days	8794.05	2/19/92	NA	NA	3/4/92	14	days
MW6024-1	8794.04	2/19/92	NA	NA	2/25/92	9	days	8794.04	2/19/92	NA	NA	3/4/92	14	days
MW792-1	8803.04	2/20/92	NA	NA A	2/25/92	5	days	8803.04	2/20/92	NA	NA	3/4/92	13	days
MW91129-1	8794.01	2/19/92	NA	NA	2/25/92	9	days	8794.01	2/19/92	NA	NA	3/4/92	14	days
MW91601-1 (5)	8794.02	2/19/92	NA	NA	2/25/92	9	days	8794.02	2/19/92	NA	NA	3/4/92	14	days
MW981-1	8803.03	2/20/92	NA	NA	2/25/92	8	days	8803.03	2/20/92	NA	NA	3/4/92	13	days
MW9990-1	8819.01	2/21/92	NA	NA	3/4/92	12	days	8819.01	2/21/92	NA	NA	3/4/92	12	days
UST-ER1	8794.10	2/19/92	NA	NA	2025/92	9	days	8794.10	2/19/92	NA	NA	3/4/92	14	days
UST-ER2	8803.05	2/20/92	NA	NA	2/25/92	ν.	days	8803.05	2/20/92	NA	NA	3/4/92	13	days
UST-TB1	8794.03	2/19/92	NA	NA	2025/92 *	9	days	8794.03	NA	NA	NA	NA	NA	
UST-TB2	8803.02	NA	NA A	NA	NA	NA		8803.02	NA	NA	NA	NA	NA	
UST-TB3 (4)	8819.02	NA	NA	NA	NA	N		8819.02	NA	NA	NA A	NA	NA	

(1) - Duplicate
(2) - Matrix spike
(3) - Mistakenly labeled as MW3024-1 on laboratory data sheets for Ethylene Dibromide analysis
(4) - Mistakenly labeled as MW91601 on laboratory data sheets for Ethylene Dibromide analysis
(5) - Duplicate of MW91129-1
* - Analysis performed but not requested
NA - Not applicableNot analyzed
AT510,9231189/USTHTIMS.XLS

SUMMARY OF EXTRACTION AND ANALYSIS DATES TABLE 5 (Cont'd) **EGLIN AFB UST SITES**

Lab Sampling Extraction Daped Analysis Daped Daped Analysis Experiment Daped Daped Lab Sampling Struction Extraction Bayes Analysis Experiment Daped Daped Time Analysis Experiment Daped Daped Time Analysis Experiment Daped Daped Analysis Experiment Daped Daped Analysis Experiment Daped Daped Analysis Experiment Daped Daped Daped Analysis Experiment Daped D				BIEX - EPA 602	FA 602			'			MIBE - EFA 602	EFA 602			1
93 (5) 4 (5) 6 (1) 6 (4) 8 (8) 1 (4) 8 (8) 1 (4) 8 (8) 1 (4) 8 (8) 1 (4) 8 (8) 1 (4) 8 (8) 1 (4) 8 (8) 1 (4) 8 (8) 1 (4) 8 (8) 1 (4) <t< th=""><th>Field ID</th><th>Lab ID#</th><th>Sampling Date</th><th>Extraction Date</th><th>Elapsed</th><th>Analysis Date</th><th>Elapsed</th><th></th><th>Lab ID#</th><th>Sampling Date</th><th>Extraction Date</th><th>Elapsed</th><th>Analysis Date</th><th>Elapsed</th><th></th></t<>	Field ID	Lab ID#	Sampling Date	Extraction Date	Elapsed	Analysis Date	Elapsed		Lab ID#	Sampling Date	Extraction Date	Elapsed	Analysis Date	Elapsed	
KSD406 21992 NA A2192 49,8 8794.06 21992 NA 22192 2 43,8 8794.06 21992 NA 22192 2 43,8 8794.06 21992 NA 22192 2 43,8 8794.03 21992 NA 72192 2 2 43,8 8794.03 21992 NA 72192 2 2 43,8 8794.03 21992 NA 22192 2 2 43,8 8794.03 21992 NA	MW3021-1 (3)	8803.01	2/20/92	NA	NA	2/21/92	-	day	8803.01	2/20/92	NA	NA	2/21/92	-	day
65 (3) 61 (4) 61 (4) 6 49×8 879,40 (7) 71992 NA NA 721,92 6 49×8 879,40 (7) 71992 NA NA 721,92 2 49×8 879,40 (7) 71992 NA NA 721,92 2 49×8 879,40 (7) 71992 NA 721,92 2 49×8 879,40 (7) 71992 NA 721,92 2 49×8 879,40 (7) 71992 NA 721,92 2 2 49×8 879,40 (7) 71992 NA 721,92 2 2 49×8 879,40 (7) 71992 NA 721,92 7	MW4204-1	8794.06	2/19/92	NA	NA	2/21/92	2	days	8794.06	2/19/92	NA	NA	2/21/92	2	days
45 (2) 87 (3) 87 (4)<	MW4204-1 MSD (1)	8794.07	2/19/92	NA	NA	2/21/92	2	days	8794.07	2/19/92	NA	NA	2/21/92	2	days
8794.05 C1992 NA NA 22192 0 439 8794.05 11992 NA 22192 2 439 8794.05 11992 NA 0 22192 2 2 439 8794.04 21992 NA 0 2 1 439 8794.04 2/1992 NA 0 2/1992 NA 0 2/1992 NA 2/2192 NA 0 0 0 0 0 0 4 8/3401 2/2192 NA 0	MW4204-1 MS (2)	8794.08	2/19/92	NA	NA	2/21/92	7	days	8794.08	2/19/92	NA	NA A	2/21/92	2	days
8993.04 21092 NA 721,92 1 days 8794.04 21092 NA NA 221,92 1 days 8794.04 21092 NA NA 221,92 1 days 8794.01 21092 NA NA 221,92 1 days 8794.01 21092 NA NA 221,92 NA NA NA 221,92 NA NA NA NA NA NA NA NA	MW6001-1	8794.05	2/19/92	NA	NA	2/21/92	7	days	8794.05	2/19/92	NA	NA	2/21/92	2	days
14 8803.04 220,02 NA A21,02 4 as 870,04 710,02 NA 721,02 1 days 870,04 710,02 NA NA 721,02 1 days 870,01 710,02 NA 721,02 1 days 870,01 710,02 NA 721,02 7 221,02 NA 721,02 NA NA 721,02 NA 721,02 NA NA 721,02 NA 721,02 NA NA 721,02 NA NA 72	MW6024-1	8794.04	2/19/92	NA	NA	2/21/92	2	days	8794.04	2/19/92	NA	NA	2/21/92	2	days
(5) (8) (1) <td>MW792-1</td> <td>8803.04</td> <td>2/20/92</td> <td>NA</td> <td>NA</td> <td>2/21/92</td> <td>1</td> <td>day</td> <td>8803.04</td> <td>2/20/92</td> <td>NA</td> <td>NA</td> <td>2/21/92</td> <td></td> <td>day</td>	MW792-1	8803.04	2/20/92	NA	NA	2/21/92	1	day	8803.04	2/20/92	NA	NA	2/21/92		day
8794.02 21992 NA NA 22192 2 4894.02 21992 NA NA 22192 2 8803.03 22092 NA NA 22192 1 days 8803.03 22092 NA NA 22192 1 8819.01 22192 NA 22592 4 days 819.01 21992 NA NA 22192 1 8803.05 21992 NA NA 22192 NA NA NA NA 22192 1 8803.05 21992 NA NA 22192 1 days 874.03 21992 NA NA 22192 1 8803.05 21992 NA NA 22192 1 days 874.03 21992 NA 22192 1 8803.02 22092 NA NA 22192 1 days 8803.05 21992 NA NA 22192 1 8803.02 22092	MW91129-1	8794.01	2/19/92	NA	NA	2/21/92	7	days	8794.01	2/19/92	NA	NA	2/21/92	2	days
8803.03 20092 NA NA 20192 1 days 8803.03 22092 NA NA 22192 1 8819.01 22192 NA 12592 4 days 8819.01 22192 NA NA 22192 4 8803.05 21992 NA NA 22192 1 days 8794.03 21992 NA NA 22192 2 8803.05 21092 NA NA 22192 1 days 8794.03 21992 NA NA 22192 1 8803.02 21092 NA NA 21192 1 days 8794.03 21092 NA 22192 1 4 8803.02 22092 NA NA 22192 1 22192 1	MW91601-1 (5)	8794.02	2/19/92	NA	NA	2/21/92	7	days	8794.02	2/19/92	NA	NA	2/21/92	2	days
8819.01 2/21/92 NA NA 2/25/92 4 days 8819.01 2/21/92 NA NA 2/25/92 4 8794.10 2/19/92 1 days 8794.10 2/19/92 NA NA 2/21/92 2 8803.05 2/20/92 NA NA 2/21/92 1 days 8794.03 2/19/92 NA NA 2/21/92 1 8803.02 2/20/92 NA NA 2/21/92 1 days 8794.03 2/19/92 NA NA 2/21/92 1 8803.02 2/20/92 NA NA 2/21/92 1 days 8819.02 2/20/92 NA NA 2/21/92 1 4) 8819.02 2/21/92 NA NA 2/25/92 4 days 8819.02 2/21/92 NA NA 2/25/92 4	MW981-1	8803.03	2/20/92	NA	NA	2/21/92	1	day	8803.03	2/20/92	NA	NA	2/21/92	-	day
4794.10 2/19/92 NA 721/92 2 days 8794.10 2/19/92 NA NA 2/21/92 2 days 8794.10 2/19/92 NA NA 2/21/92 1 day 8803.05 2/20/92 NA NA 2/21/92 1 day 8794.03 2/19/92 NA NA 2/21/92 1 49 8803.02 2/20/92 NA NA 2/21/92 1 days 8803.02 2/20/92 NA NA 2/21/92 1 49 8819.02 2/21/92 NA NA 2/21/92 NA NA 2/25/92 4	MW9990-1	8819.01	2/21/92	NA	NA	2/25/92	4	days	8819.01	2/21/92	NA	NA	2/25/92	4	days
8803.05 2/20/92 NA NA 2/21/92 1 day 8803.05 2/20/92 NA NA 2/21/92 1 days 8794.03 2/19/92 NA NA 2/21/92 1 2 days 8794.03 2/19/92 NA NA 2/21/92 1 days 8803.02 2/20/92 NA NA 2/21/92 4 days 8819.02 2/21/92 NA NA 2/25/92 NA NA 2/25/92 4 days 8819.02 2/21/92 NA NA 2/25/92 NA NA NA 2/25/92 NA NA NA 2/25/92 NA NA NA 2/25/92 NA NA NA 2/25/92 NA NA NA NA 2/25/92 NA NA NA NA NA 2/25/92 NA NA NA 2/25/92 NA NA NA NA NA 2/25/92 NA	UST-ER1	8794.10	2/19/92	NA	NA	2/21/92	2	days	8794.10	2/19/92	NA	NA	2/21/92	2	days
8794.03 2/19/92 NA NA 2/21/92 2 days 8794.03 2/19/92 NA NA 2/21/92 2 8803.02 2/20/92 NA NA 2/21/92 1 8819.02 2/21/92 NA NA 2/25/92 4 days 8819.02 2/21/92 NA NA 2/25/92 4	UST-ER2	8803.05	2/20/92	NA	NA	2/21/92	1	day	8803.05	2/20/92	NA	NA	2/21/92	-	day
8803.02 2/20/92 NA NA 2/21/92 1 day 8803.02 2/20/92 NA NA 2/21/92 1 8819.02 2/21/92 NA NA 2/25/92 4 days 8819.02 2/21/92 NA NA 2/25/92 4	UST-TB1	8794.03	2/19/92	NA	NA	2/21/92	2	days	8794.03	2/19/92	NA	NA	2/21/92	2	days
8819.02 2/21/92 NA NA 2/25/92 4 days 8819.02 2/21/92 NA NA 2/25/92 4	UST-TB2	8803.02	2/20/92	NA	NA	2/21/92		day	8803.02	2/20/92	NA	NA	2/21/92	-	day
	UST-TB3 (4)	8819.02	2/21/92	NA	NA	2/25/92	4	days	8819.02	2/21/92	NA	NA	2/25/92	4	days

Matrix spike duplicate
 Marix spike
 Massakenly labeled as MW3024-1 on laboratory data sheets for Ethylene Dibromide analysis
 Mistakenly labeled as MW91601 on laboratory data sheets for Ethylene Dibromide analysis
 Duplicate of MW91129-1
 NA - Not applicableNot analyzed

AT510/923J189/USTHTIMS.XLS

SUMMARY OF EXTRACTION AND ANALYSIS DATES TABLE 5 (Cont'd) EGLIN AFB **UST SITTES**

Field ID	Lab ID#	Sampling Date	Extraction Date	Elapsed Time		Analysis Date	Elapsed	
MW3021-1 (3)	8803.01	2/20/92	2/28/92	∞	days	3/6/92	15	days
MW4204-1	8794.06	2/19/92	2/28/92	6	days	3/6/92	16	days
MW4204-1 MSD (1)	8794.07	2/19/92	2/28/92	6	days	3/6/92	16	days
MW4204-1 MS (2)	8794.08	2/19/92	2/28/92	6	days	3/6/92	16	days
MW6001-1	8794.05	2/19/92	2/28/92	6	days	3/6/92	16	days
MW6024-1	8794.04	2/19/92	2/28/92	6	days	3/6/92	16	days
MW792-1	8803.04	2/20/92	2/28/92	∞	days	3/6/92	15	days
MW91129-1	8794.01	2/19/92	2/28/92	6	days	3/6/92	16	days
MW91601-1 (5)	8794.02	2/19/92	2/28/92	6	days	3/6/92	16	days
MW981-1	8803.03	2/20/92	2/28/92	œ	days	3/6/92	15	days
MW9990-1	8819.01	2/21/92	2/28/92	7	days	3/6/92	14	days
UST-ER1	8794.10	2/19/92	2/28/92	6	days	3/6/92	16	days
UST-ER2	8803.05	2/20/92	2/28/92	œ	days	3/6/92	15	days
UST-TB1	8794.03	NA	NA	NA		NA	NA	
UST-TB2	8803.02	NA	NA	NA		NA	NA	
UST-TB3 (4)	8819 02	ĄN	V.	ĄZ		Y Z	2	

Matrix spike duplicate
 Matrix spike
 Matrix spike
 Mistakenly labeled as MW3024-1 on laboratory data sheets for Ethylene Dibromide analysis
 Mistakenly labeled as MW91601 on laboratory data sheets for Ethylene Dibromide analysis
 Duplicate of MW91129-1
 NA - Not applicableNot analyzed

TABLE 6 SUMMARY OF QC ACCEPTANCE CRITERIA AND DETECTION LIMITS FOR MATRIX SPIKES, MATRIX SPIKE DUPLICATES AND SURROGATE SPIKES UST SITES EGLIN AFB

Analyte	Method	Detection Limit	Units	Spike Recovery, Percent (Range)	Relative Percent Difference (Range)
1,2-Dichloroethane	EPA 601	1.0	ug/L	80-120 %	< 20 %
Ethylene Dibromide	EPA 504.1	0.01	ug/L	80-120 %	< 20 %
Petroleum Hydrocarbons	EPA 418.1	500 *	ug/L	75-125 %	< 20 %
Lead	EPA 239.2	3.0	ug/L	75-125 %	< 20 %
BTEX	EPA 602	1.0	ug/L	80-120 %	< 20 %
МТВЕ	EPA 602	1.0	ug/L	80-120 %	< 20 %
Polynuclear Aromatic Hydrocarbons	EPA 610	1.0	ug/L	80-120 %	< 20 %

^{• -} Varies. See Table 7 for complete list of detection limits

SUMMARY OF ANALYTICAL RESULTS EGLIN AFB **UST SITTES** TABLE 7

		1,2-Dichloroethane	roethane	Ethylene Dibromide	bromide	Petroleum Hydrocarbons	drocarbons	
		Detection		Detection		Detection		
Sample Matrix	Sample ID	Limit (ug/L)	Result (ug/L)	Limit (ug/L)	Result (ug/L)	Limit (ug/L)	Result (ug/L)	Page Number
Water	MW3021-1 (3)	1.0	QN	0.01	ND	200	QN	B-43,B-45,B-48
Water	MW4204-1	1.0	QN	0.01	QN	200	Q	B-6,B-8,B-10
Water	MW4204-1 MSD (2)	1.0	18.4	0.01	1.80	900	28,000	B-10, B-27, B-32
Water	MW4204-1 MS (2)	1.0	17.2	0.01	1.62	200	25,000	B-10, B-27, B-32
Water	MW6001-1	1.0	ND	0.01	QN	200	Q.	B-6,B-8,B-10
Water	MW6024-1	1.0	ND	0.01	QN	200	Ð	B-6,B-8,B-10
Water	MW792-1	1.0	ND	0.01	QN	200	QN	B-43,B-45,B-48
Water	MW91129-1	1.0	ND	0.01	QN	200	QN	B-6,B-8,B-10
Water	MW91601-1 (1)	1.0	ND	0.01	QN	200	N Q	B-6,B-8,B-10
Water	MW981-1	1.0	ND	0.01	ND	200	009	B-43,B-45,B-48
Water	MW9990-1	1.0	ND	0.01	ND	1000	1,600	B-73,B-75,B-77
Water	UST-ER1	1.0	ND	0.01	ND	200	Q.	B-6,B-8
Water	UST-ER2	1.0	ND	0.01	ND	1000	Q	B-43,B-45,B-48
Water	UST-TB1	1.0	QN	0.01	QN	200	ND*	B-6,B-8,B-10
Water	UST-TB2	1.0	ND	0.01	QN	NA	NA	B-43,B-45
Water	UST-TB3 (4)	1.0	NO	0.01	ND	NA	NA	B-73,B-75

(1) - Duplicate of MW91129-1

(2) - Marrix spike or matrix spike duplicate

(3) - Mistakenly labeled as MW3024-1 on laboratory data sheets for Ethylene Dibromide analysis

(4) - Mistakenly labeled as MW91601 on laboratory data sheets for Ethylene Dibromide analysis

J - Estimated value

N - Tentative identification

ND - Not detected

NA - Not analyzed/Not applicable

* - Analysis performed but not requested

SUMMARY OF ANALYTICAL RESULTS TABLE 7 (Cont'd) **EGLIN AFB UST SITES**

		Lead	þa	æ	BTEX	MIBE	3E	Polynuclear Aro	Polynuclear Aromatic Hydrocarbons	
Sample Matrix	Sample ID	Detection Limit (ug/L)	Result (ug/L)	Detection Limit (ug/L)	Result (ug/L)	Detection Limit (ug/L)	Result (ug/L)	Detection Limit (ug/L)	Result (ug/L)	Page Number
Water	MW3021-1 (3)	3.0	ND	1.0	Toluene - 0.5 JN	1.0	QN	1.0	Fluoranthene - 2.0 J	B-47,B-49,B-50
Water	MW4204-1	3.0	6.9 J	1.0	QN	1.0	2	1.0	1.0 UJ	B-11,B-21,B-22
Water	MW4204-1 MSD (2)	3.0	8.0 J	1.0	VARIES	1.0	42.4	1.0	VARIES	B-11, B-29, B-34
Water	MW4204-1 MS (2)	3.0	16.5 J	1.0	VARIES	1.0	44.6	1.0	VARIES	B-11, B-29, B-34
Water	MW6001-1	3.0	ND	1.0	QN	1.0	Q.	1.0	1.0 UJ	B-11,B-19,B-20
Water	MW6024-1	3.0	10.2	1.0	QN	1.0	Q	1.0	1.0 UJ	B-11,B-17,B-18
Nater 27	MW792-1	3.0	142.0	1.0	ND	1.0	QN	1.0	1.0 UJ	B-47,B-55,B-56
Water	MW91129-1	3.0	26.6	1.0	QN	1.0	N N	1.0	1.0 UJ	B-11,B-12,B-13
Water	MW91601-1 (1)	3.0	21.4	1.0	QN	1.0	R	1.0	1.0 UJ	B-11,B-14,B-15
Water	MW981-1	3.0	5.4	1.0	Q.	1.0	ND	1.0	1.0 UJ	B-47,B-53,B-54
Water	MW9990-1	3.0	QN	1.0	QN ON	1.0	Q	1.0	QN	B-78,B-79,B-80
Water	UST-ER1	3.0	Q.	1.0	QN	1.0	S	1.0	1.0 UJ	B-11,B-23,B-24
Water	UST-ER2	3.0	NO	1.0	Xylenes - 0.7 JN	1.0	S.	1.0	1.0 UJ	B-47,B-57,B-58
Water	UST-TB1	NA	NA	1.0	ND	1.0	S.	NA	NA	B-16
Water	UST-TB2	NA	NA	1.0	QN	1.0	R	NA	NA	B-52
Water	UST-TB3 (4)	NA	NA	1.0	Q.	1.0	QX	Y.	NA	B-81

Upplicate of MW91129-1
 Matrix spike or matrix spike duplicate
 Mistakenly labeled as MW3024-1 on laboratory data sheets for Ethylene Dibromide analysis
 Mistakenly labeled as MW91601 on laboratory data sheets for Ethylene Dibromide analysis
 Estimated value

N - Tentative identification

ND - Not detected

NA - Not analyzed/Not applicable UI - Due to holding times exceeding criteria for extractions, the method detection limits are estimated and all nondetections are qualified as estimated and presented with the detection limit

AT510/923J189/USTSAR.XLS

APPENDIX A
DRILLING RECORDS

	50	11	BOI	RING LOG AND WE	LL CONST	HOCITON	TIECOND			
Clier	nt <u>Eal</u>	ín	ΔFB				Page 1 of 2			
Site	Blda	30	21 -	Duke Field	Project I	.D. <u>AT510.</u>	04			
	ng I.D					MW3021-1				
				r R. Surrency		alled <u>2/6/</u>	92			
Doil	ling M	y	od H	SA 4.25 ID		ted 2/6/92				
				plit Spoon		terial <u>2"</u>				
							e. 0.010 slot			
	Start					terval (ft				
Date	Compl	ete	<u> </u>	5/92		Interval (
Dril	ler <u>Gr</u>	ine	r Dr	illing Co.		alled? <u>No</u>				
				(in) <u>6</u>						
	h Dril					h (ft) <u>59</u>	Not monsuped			
				(ft) <u>Not measured</u>			Not measured			
				t) <u>55.25</u>		el (ft) <u>55</u>				
Date	Measu	red	2/6	5/92	Date Measured 2/6/92					
						1 T				
						(0)				
= -	I Z		⋖			SS GRAPHIC	WELL DIAGRAM			
DEPTH (feet)	9	REC.	S @	LITHOLOGIC DESC	CRIPTION					
	OWS/6		HNu/OVA (ppm)	22,,,,,		SOIL				
	BLOWS/6	96	Î			S				
	"									
0	1					SW				
1	1.2.	50	75	SAND, fine to medium, trac	ce silt, light					
1 1	1.1			brown, very loose, slight	tly moist.					
1 T	7									
1 -										
+	4									
= 1	√ 1,1.	70	75	SAND, fine to medium, mode	erately sorted.					
5-	1.1	' -		yellowish brown, very loc	se, slightly					
1 f	7		1	moist.						
1 1	7						88			
10-		100	60	SAND, fine to medium, ligh	ht brown, very					
1 1	4,6			loose to loose, slightly	moist.					
1			!							
1 1										
1 4	- 1	1								
1 1		1								
I T	// =	85	100							
15-	4.5.	00	100	SAND, fine to medium, mod orangish brown, loose, s	erately sorteu, lightly moist	Grout	8 8			
1 4				orangish brown, 100se, s	rightly morse.					
							1 2			
1 1							8 8			
1 1			1							
1 +	_			1						
20	M 4.4.	85	250	As above except very loos	e .		8 8			
50-	4.4			AS above except very 1005	- •					
 	7			1			M M			
							19 19			
							M M			
1	1	1	1				8 8			
1 +	-					SC				
25—	V з.9.	100	320	SAND and CLAY, fine to me	dium, trace		M M			
23-7	13,16			silt, white to reddish b	rown, mottled.					
 	7	1		loose to firm, slightly						
		1	1			7.55	8 8			
] .							
1		1	1			<u> </u>	8 8			
+	\forall					SW	BMLTINUS			
	ΧI	1	1	1			DALI INDO			

ENGINEERING - SCIENCE soil boring log and well construction record

Seolo	g I.	DS _R.	B302	- Duke Field 21-1 Pency	Well I.D. Date Insta				2	
(feet)	BLOWS/6 IN	%REC.	HNU/OVA (ppm)	LITHOLOGIC DESCRI	PTION	SOIL CLASS	GRAPHIC LOG		WELL DIA	GRAM
30	9,12		500	SAND, some silt, fine to a to orangish brown, firm, moist.	nedium, white slightly	SW				
35-	9,12	, 100	300	SAND, fine to medium, trac to light gray, loose to moist.	ce silt, white firm, slightly			Grout		
40-	6,9,		160	SAND, fine to medium, well white, loose to firm, sl	l sorted, ightly moist.					
45-	5,9,		125	As above except loose to	very firm.			*		Bentonite Seal
50-	7,11	. 100	400	SAND, fine to medium, tra firm, moist.	ce silt, white,			Sand Pack		
55	9,13	, 95 4	340	As above, moist to 55.8',	wet at 55.8'.			S I		Screened Interva
60-	11.10		130	SAND, fine to medium, som loose to firm. Total Depth = 59'	e silt, white,			*		*

		20) <u> </u>	BO	RING LOG AND WE	LL CONST	HOCTION	TIECOTO
Clie	en.	t Egl	in	AFB				Page 1 of 2
Site	e _[Bldq.	42	04 -	Field No. 4		.D. <u>AT510.</u>	04
		g I.C				Well I.D.		
					r R. Surrency	Date Inst	alled <u>2/7/</u>	92
Dri	יר. ורר	ina M	1eth	od F	ISA 4.25 ID		ted <u>2/7/92</u>	
					Split Spoon			PVC Sch. 40
		Start						e. 0.010 slot
							terval (ft	
					77/92		Interval (
Dri	11	er <u>Gr</u>	ine	ir ur	illing Co.			
					(in) <u>6</u>		alled? <u>No</u>	
Dep.	th	Dril	led	ı (ft	.) _50		n (ft) <u>50</u>	No. to the second
					(ft) <u>Not measured</u>			Not measured
Dep	th	to W	<i>l</i> ate	er (f	t) <u>48.12</u>		el (ft) <u>48</u>	
Date	e	Measu	ired	2/7	7/92	Date Meas	ured <u>2/7/9</u>)2
	П							
		N.		4			CLASS GRAPHIC	WELL DIAGRAM
PTI		و	REC.	S =	LITHOLOGIC DESC	CRIPTION	당 GRAPHIC	
DEPTH (feet)	SAMPLE	ls/		HNu/0VA (ppm)	· · · · · · · · · · · · · · · · · · ·	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		
	S	BLOWS/6	>4	至			S01L F06	
	- I	8						
0-	1		-				SW::::::	
] .	$ \chi $	4,3,	70	10	SAND, fine to medium, trad	e silt, shell		
1	M	3,2	1		fragments, reddish brown	very loose,		
					well sorted, slightly mo:	ist.		
	4							
	\bot							Ø Ø
_	М	1,3,	40	12	CAND fire to medium took			
5-	الال	2.2	-0	1	SAND, fine to medium, trac yellowish brown, very loc	se moderately		
.	+4				sorted, slightly moist.	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		8 8
İ .]				301 ccu, 311giic1,			
								88
·	1							
	+							
10-	JVL	3,3,	75	5	SAND, fine to medium, ligh	nt vellowish		88
10	Ν	4,4			brown, very loose, modera	ately sorted,		99
}	1				slightly moist.			
	4			1				8 8
1 '	17						1 33 33 4	19 19
15-	- X	4,5,	95	60	SAND, fine to medium, tra		Grout	
	V	8,13			orangish brown to 15°, w	nite from 15-	::::::::::::	88
	П				15.4', orangish brown from	om 15.4-15.8°,		
1	+		1		white, fine sand from 15	.8-16', loose		M M
1 .	1		1		to firm, slightly moist.			
			1	1				
	17							8 8
20-	$\exists X$	5,8,	75	13	SAND, fine to medium, whi		[*****]	
1	Λ	8,7			brown from 20.2 to 21',	loose, slightly		
	T				moist.			
	1							
1	4							8 8
1	17			000				
25-	$\forall X$	9,11,	85	200	SAND, fine to medium, whi			
	Λ	21,26			brown, banded, firm to v	ery firm,		
					slightly moist.			
	1	1	1					
	+							
	\perp				Į.			
	X	1						BMLTINUS
	$V \setminus$	J	1	L				

ENGINEERING - SCIENCE soil boring log and well construction record

Site Bor: Geo:	e_ <u>E</u>	J.D	42	804 - 88420	- Field No. 4 04-1 Pency	Project I Well I.D. Date Inst	_M	W4204	-1)4	ge 2 of 2
(feet)	SAMPLE	BLOWS/6 IN	%REC.	HNu/OVA (ppm)	LITHOLOGIC DESCRI	PTION	SOIL CLASS	GRAPHIC LOG		WELL D	IAGRAM
30-	X	4,8, 9,8	80	50	SAND, fine to medium, whit dark brown from 30.5-31' moderately sorted.	te to 30.5', , loose,	SW		k— Graut —		_
35 - -	X	8,14, 19,23	75	240	SAND, medium to coarse, when brown, poorly sorted, fir firm, slightly moist.	nite to light rm to very			1		Bentonite Seal
40-	X	5,11, 14,19	90	6	SAND, medium to coarse to medium from 40.5-41', who brown, firm, slightly mod	ite to light			Sand Pack		1
45-	X	9,11, 16,16	100	180	SAND and SILT, fine to medium to coarse from 45 brown, wet at 45.5'.	dium to 45.5', .5-46', dark	SM		Sar		— Screened Interval
50-	X	4,6, 9,23	70	280	SAND, medium to coarse, so brown, poorly sorted, loo firm, wet. Total Depth = 50'		SW		*		↓
55											
60-											
- - 65-											
00-											

Borin Geolo Drill Sampl Date Date Drill Boreh Depth Groun Depth	Bldq.D/MMtlg/SMOTB ggingam_erleoa NI 9/SMOTB tea MMtlg/SMOTB	600 . SB Engi etho eted iner iame led vati	01 - 06 00 10 00 H 00 S 2/4/ 1 2/ 1 Dr (ft 10 0 (ft	r_R. Surrency SA 4.25 ID plit Spoon 92	Well I.D. Date Inst Date Grou Casing Ma Screen Ma Casing In Screened Sump Inst Well Dept TOC Eleva Water Lev	terial sar terval (for Interval alled? No h (ft) 64	/92 2 PVC Sch. 40 me. 0.010 slot t) _0-49 (ft) _49-64 Not measured 9.13
S		% REC.	NA (T	
0 1			(mdd)	LITHOLOGIC DESC	CRIPTION	SOIL CLASS POR PURPLE	WELL DIAGRAM
	3,2,	60	0	SAND, medium to coarse, tr pebbly, reddish brown, ve slightly moist.	race silt. ery loose.	SW	
5-	1.2.	60	1	As above, well sorted, most loose.	st, very		
10-	1.1.	90	15	SAND, medium to coarse, tr reddish brown, very loose			
15	3,5, 5,7	90	20	SAND, fine to medium, some clay, reddish brown, loos		Grout	
20-	5,6, 6,6	95	140	SAND and SILT, trace clay medium, reddish brown to loose, trace of black cofuel staining), slight fumoist.	light brown, lor (possibly	SM	
25-	5.9, 13,16	90	130	SAND, medium to coarse, tr light brown to 25', redd: 25-26', slight fuel odor firm, slightly moist.	ish brown from	SW	

ENGINEERING - SCIENCE soil boring log and well construction record

or:	in	g I.C	٤ (B600	Field No. 6 01-1 cency	Project I Well I.D. Date Inst	_M	W6001	-1			· · · · · · · · · · · · · · · · · · ·
(feet)	SAMPLE	BLOWS/6 IN	%REC.	HNu/OVA (ppm)	LITHOLOGIC DESCRI	PTION	SOIL CLASS	GRAPHIC LOG		WELL	DIAGF	RAM
30 - - -	X	4,10,	100	175	SAND, fine to medium, light sorted, slight fuel odor firm, slightly moist.		SW					
- 35- - - -	X	9,11, 13,13		220	SAND, medium to coarse, to reddish brown to 35.5', 35.5-36', slight odor, s	light gray from			Grout			
- 40- - -	X	5,9, 11,14	80	180	SAND, medium to coarse, we white, slight odor, loose slightly moist.	ell sorted, e to firm,						
45- - -	X	5,11, 15,17	80	175	SAND, medium, well sorted light pink, loose to fir moist, slight odor.	, white to m, slightly				8388888		Bentonite Seal
50- - -	X	5,9, 13,20	60	170	As above.							
55-	X	10,15, 17,20	60	60	SAND, medium, well sorted odor, firm, moist.	, white, no			Sand Pack			Screened Interval —
- -60 -	X	3,8, 10,13	95	17	As above, loose to firm,	wet.						Scre
					As above.				1			1
65-	X				Total Depth = 64'							

ENGINEERING - SCIENCE soil boring log and well construction record

Site	ng	I.D	_60 S	01 - 8600	Field No. 6 1-1 ency	Project I. Well I.D. Date Insta	М	W6001-	-1
DEPTH (feet)	SAMPLE	BLOWS/6 IN	XREC.	HNu/0VA (ppm)	LITHOLOGIC DESCRI	PTION	SOIL CLASS	GRAPHIC LOG	WELL DIAGRAM
65	X	0,0,	90	0			SW	*******	
70-					·				
75 -									
80-									
85—									
90-									
95-									•
100									SMLTINU6

				RING LOG AND WE				0.1		
Clien	t Eq.	lin	AFB						Page :	l of 2
				- Field No. 6	Project I					
Borin					Well I.D.					
				er R. Surrency	Date Inst	a 1 :	led_2	/5/92		
Drill	ing N	1eth	od_b	HSA 4.25 ID	Date Grou					
				Split Spoon	Casing Ma					
Date	Start	ed_	2/5/	/92	Screen Ma					lot
				/5/92	Casing In					
				rilling Co.	Screened				50-60	
				(in) <u>6</u>	Sump Inst					
				.) _60	Well Depti					
				(ft) <u>Not measured</u>	TOC Eleva					<u>2</u> d
				ft) <u>57.85</u>	Water Leve					
Date	Measu	ırec	2/5	5/92	Date Meas	ure	ed_2/	5/92		
		T								
	Z		_			SS	GRAPHIC		WELL DIAGRAN	1
DEPTH (feet) SAMPLE	9	REC.	HNu/0VA (ppm)	LITHOLOGIC DESC	RIPTION	1	GRAPHIC		HELL DIAGRAP	•
H 는 F	Ş	E .	(mqq)	2111020010 8230	1111111111		LOG			
S	BLOWS/6	>4	É			SOIL		ſ		
	ш			<u> </u>						
0-1/	3,4,	80	10		and about	SW		1		
1 1XI	6,8	80	10	SAND, fine to coarse, yell very loose to loose, slig						
+				Very loose to loose, sily	morse.					
-										
_e M	2,2,	50	10	SAND fire to modium toos	o cil+					
5-X	2,4			SAND, fine to medium, trac yellowish brown, very loc		1 1				
				moist.	,	1				
		İ								
I M	2 2	85	11							
10- X	3,2, 3,3	83	11	SAND, fine to medium, some brown, very loose, slight						
 	3,5			brown, very loose, slight	.ly moist.					
1						1 1				
1			İ			1 1				,
1								4		
15-X	5,4,	90	11	As above except very loose	to loose.			Grout		
1	5,5							9		
									12	
+										
20-X	7,9,	90	12	SAND, fine to medium, some	silt, reddish					
	9,11			brown, loose to firm, sli	ghtly moist.					
			•							
1										
-			1							
25-\	4,7,	80	13	SAND, fine to medium, trac	e silt. white					
\\\\	9,11			to light pink, loose to						
		1		moderately sorted, slight	ly moist.					
									12	
			1							
						1				
		1								BMLTINU6
				L						

ENGINEERING - SCIENCE soil boring log and well construction record

Site Bori	: _ :	g I.C	60 S	024 - 08602	- Field No. 6 24-2 Pency	Project I Well I.D. Date Inst	M	W6024	- 1)4	ige 2 of a
(feet)	SAMPLE	BLOWS/6 IN	XREC.	HNu/OVA (ppm)	LITHOLOGIC DESCRI	PTION	SOIL CLASS			WELL (DIAGRAM
30-	X	5,12, 12,14	80	12	SAND, fine to medium, oran white, firm, banded, mode sorted, slightly moist.	ngish brown to erately	Sh				
35— - -	X	5,9, 16,14	80	12	As above except loose to	firm.			Grout		
40-	X	5.9. 13.15	75	450	SAND, fine to medium, whi firm, well sorted, no odd moist.	te, loose to or, slightly					
45- - -	X	6,14, 14,16		600	SAND, fine to medium, tra firm, well sorted, no odd	ce silt, white, or, very moist.			↓ ↑		T
50-	X	9,11, 19,21	90	200	As above except firm to vo	ery firm, no			Pack		rval — Bentonite
55-	X	11,14 18,16		240	SAND, fine to medium, well brown to white, firm, no 55.7', wet at 55.7'.	l sorted, light odor, moist to			Sand I		— Screened Interval
60-	X	0,0, 4,5	50	35	SAND, fine to medium, tra orangish brown, very loo no odor, wet. Total Depth = 60'	ce silt, se to loose,			<u> </u>] 1
65-											

			50	11	BO	RING LOG AND WE	LL CONST	חו	ידוטכ		IECON			
	Clier						5 - · · · · -	_		40.0		je	1 of	1
						Eglin Main	Project I Well I.D.				3			-
	Borin					r R. Surrency	Date Inst				12			-
						ISA 4.25 ID	Date Grou							-
1						Split Spoon	Casing Ma				C Sch	. 4	0	_
-	Date		_				Screen Ma							_
ł						10/92	Casing In							_
١						illing Co.	Screened					3		_
ı						(in) <u>6</u>	Sump Inst							-
l	Depti	ר (Dril	led	(ft	.) _13	Well Dept		_					-
l						(ft) <u>Not measured</u>								-
l						t) Not measured	Water Lev					red		-
l	Date	Me	easu	red	2/1	1/92	Date Meas	ur	ed_ <u>2/</u>	11/92				-
ŀ		T												
l	= -		Z	-	⋖			CLASS			WELL DI	AGRA	M	
	(feet)		9/	REC.	S (E	LITHOLOGIC DESC	CRIPTION	2	GRAPHIC					-
l	(feet)	E	BLOWS/6	% B	HNu/OVA (ppm)			SOIL	LOG					
L			BE(•	Ξ.			8	·					
ſ	0	\bot						SW						_
	1			100	24	SAND, fine to medium, mode	erately sorted.	3W					Gra	ut
١	1/	/ A	uger			tan to light brown, sligh	tly moist.						E	
l	- 1/	\mathbb{I}								Î			_	
l	1/	V	_										a te	
l	+	7											val ——Bentonite	
l	5-)	(ª	2,1, 1,3	80	17	SAND, fine to medium, mode							- te	
l	+	4	1,5			tan to white, very loose,	wet.			×			S S	
l	4		1							Sand Pack			Į.	
l		-								5			Ä	
١										Sar			5	
l	10 1	7 .	ι,з,	50	34	CAND madden to come to							Screened Interval Ben	
l	10-	()	3,6	30	37	SAND, medium to coarse, tr poorly sorted, tan to whi	ace siit, ite. verv loose						SCI	
l	Ť	1				to loose, wet.	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,						1	
١	+		1											
l	4							-		* 1			*	
l	4					Total Depth = 13'								
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	SOIL	BO	RING LOG AND WE	LL CONST	HULIT	N RECORD
Boring Geologis Drilling Sampling Date Standard Date Condition Borehold Depth D Ground	dq. 91 I.D. S st/Eng g Meth g Meth anted_ mplete Grine e Diam rilleo Elevat o Wate	129 B911 inee od bod 9 2/3/d 2/ er Dr neter I (ft	r_R. Surrency SA 4.25 ID Split Spoon 92 23/92 cilling Co. c (in) 6 c) 14 (ft) Not measured ct) 9.73	Screen Ma Casing In Screened Sump Insta Well Dept	MW91129 alled 2/3/ ted 2/3/ terial 3 terval Interval alled? N tion (ft) 1 el (ft)	9-1 /3/92 /92 2" PVC Sch. 40 same. 0.010 slot (ft) 0-4 1 (ft) 4-14 No 14 1) Not measured 9.73
DEPTH (feet) SAMPLE	BLOWS/6 IN REC.	HNu/OVA (ppm)	LITHOLOGIC DESC	CRIPTION	SOIL CLASS	WELL DIAGRAM
	.5, 90 5,5	0.3	SAND, medium to coarse, tr reddish brown, shell frag fragments, loose, slightl	ments, asphalt	SW	Grout
5- 3,5	,5, 75 5,2	200	SAND and SILT, reddish bro fragments, very loose to sand at 5.5', slightly mo 5.8'.	loose, gray	SM	Interval Bentonite-Seal
10-123	,3, 75 3,5	0.3	SAND, fine to medium, some wood fragments at 10', si organic odor, very loose	light	SW	Sand Pack — Sand Pack — Screened Interval Ber
	,4, ,12	0	SAND, medium to coarse, where fragments at 15', very lowell sorted, wet. Total Depth = 14'			
20-						
25-						
						BHLTINUS

	SC	DIL	BO	RING LOG AND WE	LL CONST	Нι	JULI	UN	HEL	UHU	
Borin Geolo Drill Sampl Date Date Drill Boren Groun Depth	Bldg. g I.C gist/ ing M ing M Start Compl er Gr ole C Dril d Ele	98 Engleth Methled_ Lete Lete Diam	B981 inee iod_F iod_S 2/10 id_2/ er_Dr neter I (ft	er R. Surrency HSA 4.25 ID Split Spoon	Project I Well I.D. Date Inst Date Grou Casing Ma Screen Ma Casing In Screened Sump Inst Well Dept TOC Eleva Water Leve Date Meas	MI ter ter ter Ini al:	W981- led 2 led 2 led 2 rial -	1 /10/ 1/92 2" F same (ft) 1 (f No 44 t) N	(92) (92 (92 (92 (92 (92 (92 (92 (92 (92 (92	Sch. .010 34 34-44	slot
DEPTH (feet)	BLOWS/6 IN	% REC.	HNu/OVA (ppm)	LITHOLOGIC DESC	CRIPTION	SOIL CLASS	GRAPHIC LOG		WE	ELL DIAGF	RAM
	Hand Auger	100	5	SAND, fine to medium, mode tan to light brown, sligh		SW					
5-	1,1,	70	600	As above except brown and	very loose.						
10-	1,1,	80	320	SAND, fine to medium, mode brown, very loose, slight	erately sorted, ly moist.			ıt			
15-	1,3, 3,5	90	360	SAND, fine to medium, trac moderately sorted, yellow tan, very loose to loose moist.	rish brown to			Grout			
20-	6,9, 12,15	80	80	SAND, fine to medium, well orangish brown, loose to moist.							
25-	3,9, 13,17	80	12	SAND, fine to medium, well orangish brown to white, slightly moist.							ONITITE Seal

ENGINEERING - SCIENCE soil boring log and well construction record

Site Bori	in:	g I.D	98	8 <u>1 -</u> 88981	Eglin Main -1 ency	Project I Well I.D. Date Inst	M	N981-	1		e 2 of	
UEP IN (feet)	SAMPLE	BLOWS/6 IN	XREC.	HNu/OVA (ppm)	LITHOLOGIC DESCRI	PTION	SOIL CLASS	GRAPHIC LOG		WELL DIA	GRAM	
30-	X	9,18. 25,31	80	13	SAND, medium to coarse, po orangish brown to white, slightly moist.	oorly sorted. firm to dense,	SW					
35-	X	9,13, 18,27	80	12	SAND, fine, well sorted, wery firm, slightly moist	white, firm to			Sand Pack ——		Interval	
40	X	6,10, 19,25	50	11	SAND, medium to coarse, polight gray to white, loos firm, wet.	porly sorted, se to very						₽
45— -	X	6,15, 19,52	70	11	SAND, medium to coarse, po brown, firm to very dense Total Depth = 44'	porly sorted, e, wet.			<u>*</u> .		<u>*</u>	
50-												
55-												
60-												
- 65-												

SOIL	BORING LOG AND WE	LL CONSTR	JC I TON	RECORD
Boring I.D. SE Geologist/Engi Drilling Metho Sampling Metho Date Started 2 Date Completed Driller Griner Borehole Diame Depth Drilled	3990-1 ineer R. Surrency od HSA 4.25 ID od Split Spoon 2/13/92 d 2/13/92 c Drilling Co. eter (in) 6 (ft) 12 ion (ft) Not measured of (ft) 2.82	Screen Mate Casing Inte Screened In Sump Instal Well Depth	W9990-1 led 2/13/9 rial 2" rial sam rval (ft terval (led? No (ft) 12 on (ft) 2.	/92 PVC Sch. 40 me. 0.010 slot) 0-2 ft) 2-12 Not measured 82
DEPTH (feet) SAMPLE BLOWS/6 IN # REC.	LITHOLOGIC DESC	NOITHIE SOIL CLASS	GRAPHIC LOG	WELL DIAGRAM
Post 100	O SAND, fine, light brown, s	SWilightly moist.	T	Val Seal Seal
5-2.3. 70	SAND, fine, white, very lowet.	ose to firm,	Sand Pack -	Screened Interval
2.3. 50	O SAND, fine, gray, very loowet. Total Depth = 12'	ose to loose,		
15-				
20-				
25-				•
				BMLTINU6

FORTH 2 BRINEETING-CLEACE Well bevolupeent Record

: Loc. : Pro : Bevi : Devi : Devi : Sous : Well : Sous : Well : Screen	ation ject elepe e e e	ne i Enter i i i i i i i i i i i i i i i i i i i	Perform Supervi Method: 64 See of Method:	B - Fadd Sp. 04 set by: G: sed by: EA: BK P: ell (pro-de	velapoont	Signer	5 (shelt up) casing	Date Deve Date Deve Time Deve Time Deve Brilling	olopeen t elopeen t elopeen t elopeen t Me thoda	Converse inch	2-4-92 Not 2-11-92 Sletted: 2-11-92 Sletted: 1521 ISA 425 T.D Proton Fectors (gal/ft) 1.8. Well=0.653 1.8. Well=1.472
Bato		4			: Velues : Receved : (gal)		Conductivity	I Tough :	Rechar	•	Caesen ts
2-11			1445		0	8.58	250	m.4		-	Pump at 63' Milky white water
/1			1454		10	8.33	200	1 21.1	5/04	,	<i>u</i>
//	;		1504		15	8.26	200	21.2	slow		//
//	!		1508		20	8.23	180		· slu	<i>,</i> :	"
//	!	;	1516	:	25	8.19	180				slightly aulky color
• //	1	;	1521	•	30	8.21	170	21.0	! //	i	
//	!	ŀ		i . :		:		•	1	:	
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Mater Total	Vel	el:_	59.	11: 65. 85 Recoved: 35 oi	70 30 asl	Post Develo	poent Pata			D-D-D-O-C	

FORTH 2 BRINGHIM-CIDICE Well Perelopsent Record

Locat Project Devel Devel Bell Sound Beter Bell Screen	ion:ct Ma. opened to pened to pened to level level livest level livest lenge	ATSION Performs Supervise Hethods South of the state of t	B-Fide 10 - off on by: Gill (pro-to- 21)	mer Dil inaning rolopped:	lliae Sime	(stick up	Data Deve Data Deve Time Deve Time Deve Brilling	lopment le elopment Cou elopment Cou elopment Cou Rethods	2-7-92 2-1 -92 101	
-					leve lopese	t Data				
late				Reserved (gal)		Consectivity (askes)	Teas	Recharge	Common to	
2-11		1726		0	7.79	100	18.0		Pump at 49° silty	
u :		1730		15	7.97	70	19.1		silty - brown ,	-
!	ł	1734		30	783	76	19.5	:	didtly silty	-
!	ĺ	D37		40	7-81	70	20.1	ŀ	11	Installe
;	1	1741	:	50	7.79	70	20.0		1	
. 1	1	1746	:	60	7.97	70	19.8	1	. 11	-
ı	l	1749	. :	65	7.44	70	19.9		4	,
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lator L Iotal V	evel: oluee	48.2	1: <u>52.0</u> 3' Rossvod: <u>6</u>	9 sel	ost Develo	poent Pata				

Form 2 Building-cipic Will Development Record

: Locat : Proje : Devel : Devel : Devel : Seund : Mator : Mell : Scree	ct No. opeant opeant opeant lepth: ad bot Level lisest s Leng	Perfore Supervi Hethod: ton of te 1	FB- Field 510 04 510 04 510 04 510 04 510 07 511 (pro-do- 10 75 5	velopses	-illins Sience	Rs 82.60 (study)	Date Dev Time Dev Time Dev Time Sev Brilling	elopeent elopeent elopeent elopeent fie thod:	legi Cose Cose Cose inch	iletedi K13
4					Teve lepas	it late		•		######################################
Sata	Rua :			Reserved (gal)		 Conductivity (seas)	Toop:	Rectar		Common to
2-11	-	1546	1	0	8.16	50	19.0	far	+ !	Pump at 59° water is sifty, oranged dry
11		1549	!!!	10	17.51	1 30	120.1		!	water is milky coloned
045454		1555	!!!	20	17.28	1 30	20.0	1 ,,	ł	Pump at 57? Milky colored
	-	1559	1	30	17.13	30	20.1	1.	i	"
		1604		40	17.09	l 30	20.2		1	slightly cloudy
	;	1607	1 1	45	17.03	30	20.0	! ,,	1	slightly cloudy
	!	1610		50	17.05	30	19.9	1 .	1	′/
!	!	1613	! !	55	17.02	30	20.1	1 ,,	1	
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FORTTO 2 BRIDGE INSTITUTE Well Development Record

: Locat : Proje : Devel : Devel : Devel : Sound : Mater : Mail : Screen	cion: Exct No. operation o	ATS Perform Supervis Netheds Litse of Ne Litse (1.8.)	- Duke A 10.04 10.	net Drill Schooling	lina Signar	o' (ther or caring)	Date Deve Date Deve Time Deve Time Beve Brilling	elegment Deg elegment Com elegment Deg elegment Com Hethods	2+6-92 Ans $2-12-92$ plotteds $2-12-92$ plotteds 927 plotteds 956 $45A-4.25$ 4.25 4.2
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late	kua !			Velues Reserved (gal)	pH	: Conductivity (andes)		Recharge Auto	Consents
1-12	******	0927		0	9,10	100	17.9		Pump at 56' Milky white coder.
//		0931		10	8.48	•	20.3	1 1	//
//		0935			8.15	30	20.5		slightly cloudy Pump at 58?
"	and the same of th	0937		20	17.93	30	20.5	! !	Pump at 58°
,		0 944		25	7.83	30	20.2	1	
. [/]		0946	-	30	7.82	36	20.2		. //
<i>,</i> !	-	0948			7.84		20.4	1 1	Elear
1	!	0953		45	7.81	30	20.1		dea
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Form 2 BRINEDING-BIDG Will Development Record

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Bata		-		: Veluce : Recoved : (gal)	1 99	: Conductivity (anhors)	 Teas (*F)"	Recharge	Comments:	PÖTÖMÖNÖNAQQQ
2.12	****	0745		0	9.70	740	13.7		Pump at 18: Dank brown : urganic	edur
<i>,,</i> !		0747		15	9.65	1730	16.0	!	"	
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<i>u</i> 1		0753	1	45	4.57	1 760	1 17.3	•		4
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Form 2 Ballemin-cipe Will bevolupsent Record

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Meter Len Total Vol	rol: luso of	Bator F	14.83°		ost Davelo	poent Data					,

Form 2 BRINERING-CIDE Well Pevelopesat Record

: Loca : Proj : Deve : Deve : Deve : Beil : Soua : Mate : Weil : Scre	tion: oct No lopeen lopeen lopeen lopeen lopeen lopeen lopeen lopeen lopeen	t Perfers t Supervi t Rethod: tton of t i	Mais - Bl 10.04 mod bys Gr isod bys Ex BK P fell (pro-de 18' 1 2"	iner D. Scheeting	-Sience	(stick up caring)	Date Devi	oloppent (oloppent (oloppent (oloppent (oloppent (oloppent (Co Co Co	legi legi legi long long long long long long long long	2-10-92 Ma: 2-12-92 Mai: 2-12-92 Mai: 1105 Mai: 1105 Mai: 118 SA 4.25 T.D. Writing Factors (qai/ft) 1.3. Mai: 0.143 1.3. Mai: 0.433 1.3. Mai: 1.472	
late	i hun		Time : Finish	: Volume : Recoved : (gal)	: pH	: Conductivit	 	Rochary - Rate		Connects	****
2-12		1105		0	8.66	170	22.4		- -	Pump at 43". Dark proma.	-
11	!	1108		1 15	8.68	1 160	1,2.6	;	1	light Eraun	
1.	i	: // n	1	25	8.62	Ku	122.3	1	1	//	BEHD
/.	1	1113	1	35	18.65	160	122.3	:	:	"	
*	1	1115	:	45	18.66	150	122.2		1	//	
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Form 2 BRINGERING-SCIENCE Well Development Record

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APPENDIX B ANALYTICAL DATA ANALYTICAL DATA BATCH 8794

MEMORANDUM

March 30, 1992

To:

File

From:

J. A. Banton

Subject:

Eglin AFB, Job No. AT510.04

Data Review, UST Sites

Batch 8794

TPH (E418.1) analyses met QA/QC criteria for holding times, blanks, and matrix spike/matrix spike duplicates.

BETX and MTBE (E602) analyses met QA/QC criteria for holding times, blanks, matrix spike/matrix spike duplicate, and surrogate recoveries. Benzene results that were analyzed by E602 failed to meet USAF maximum allowable detection limits; however, the detection limits did meet Florida petroleum contamination site clean-up criteria maximum allowable detection limits.

EDB (E504) analyses met QA/QC criteria for holding times, LCS matrix spike/matrix spike duplicate, and surrogate recoveries.

Lead (E239.2) analyses met QA/QC criteria for holding times. The matrix spike/matrix spike duplicate had a low percent recovery. The lead result in sample MW4204 was flagged "J" due to this problem.

1,2-DCE (E601) analyses met QA/QC criteria for holding times, blanks, matrix spike/matrix spike duplicate, and surrogate recoveries.

PAH (E610) analyses met criteria for blanks and surrogate recoveries. The samples MW91129-1, MW9160-1, MW6024-1, MW6001, MW4204, and UST-ER1 exceeded holding times criteria. All the compounds were flagged in the associated samples "UJ" along with the detection limit due to this problem. The compounds naphthalene, acenaphthylene, acenaphthene, benzo-(a)-anthracene, chrysene, and dibenzo(a,h)anthracene/indeno(1,2,3-cd)pyrene had low percent recovery in the matrix spike/matrix spike duplicate. These compounds were flagged "J" due to this problem in sample MW4204 (the spiked sample). In addition, the RPDs for all the

AT510\923J189

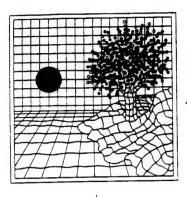
Memorandum to File Page 2 March 30, 1992

compounds in the matrix spike/matrix spike duplicate did not meet criteria. This problem require no flagging activity.

ENGINEERING-SCIENCE, INC.

J. A. Banton

Chemist, ES Atlanta



March 20, 1992

Ola Awosika
ENGINEERING SCIENCE, INC.
57 Executive Park South, Suite 590
Atlanta, GA 30329

Project: AT 510

SWLO Episode #: 8794.01 - 8794.10

Dear Mr. Awosika:

Enclosed we are submitting the analytical results for your samples received in our laboratory on February 20, 1992 for the above captioned project.

If, in your review, you should have any questions or require additional information, please call.

Sincerely,

ALLA LO

Daryl Alstatt Project Officer

DA/rb

Enclosures



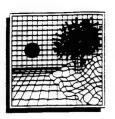
ENGINEERING-SCIENCE CHAIN OF CUSTODY RECORD

ES JOB NO.		PROJECT NAME/LOCATION		PREBERVATIVE P	COURSED /		
ATS12. 07		Eslin AFB / WST siter				Southwest Lukes	
SAMPLE	SAMPLER(S): (Signature)			A STATE OF			
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DATE	TIDAE	SAMPLE DESCRIPTION	NAME OF TAXABLE SERVICES	THE SELECTION OF THE SE	// MATTRIX	FEBAARICS	
2-19	1010	MW91129 - 1	9	1 1 1 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	wto	Destant.	
	0101	MW91601-1	9	XXXX	\	TPW EAIB. I	
	1135	15T-TBI trip Want	7	XXXX		1× 4	
B-4	1230	-1	9	× × × ×		۱۹۰	
	1345	MW6001-1	9	** ** ** ** ** ** ** ** ** ** ** ** **			
*	1520	MW4204 -1 MS/MED	カ	XXXXXX			`
	1620	UST-ERI	8,6	1 K K K K K K	>	4	une via l
						7	locks
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ENGINEERING-SCIENCE CHAIN OF CUSTODY RECORD

ES JOB HO.		PROJECT NAME/LOCATION	/ PRESERVATIVE	REQUINED /	OLED TO
ATS10. 04		Folin AFB WST sites	737		Southwest Labr
SAMPLE	SALPLER(3): (Signature)	eture)	JAN WALES	NEO UNED	
hon	from Swamp	iner			
ELVO	Take	SAMPLE DESCRIPTION	To the last	XMTTAX //	REMANICS
2-19	010	MW91129 -1		water	act. D
	010	MW91601-1	XIX X S	\	1.8143 HCT
_	1230	MW6024-1	X X X		3 ,
>	1345	1-1009MW	XXX	,	
		B B C Fine of the first S 5	1992		
	Redinquished by: (Bigmeture)	ે લે	Laboratory by:	Remarks:	
as/	No duvous	787	0000 11/12/12/0600	Airbill &	1833686724

B-5



1700 West Albany • Broken Arrow. Oklahoma 7+012 • Office (918) 251-2858 • Fax (918) 251-2858

CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8794.01 - .10HV

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-19-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER
SWLO #: 8794.01 - .10
DATE SUBMITTED: 02-20-92
DATE ANALYZED: 02-24-92

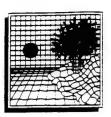
PROJECT: AT 510

METHOD REFERENCE FOR 1,2-DICHLOROETHANE: EPA 601

	SWLO	DEE.		
CLIENT ID		TIMIT	UNIT	RESULT
MW91129-1	8794.01	1.0	ug/L	ND
MW91601-1	8794.02	1.0	ug/L	ND
UST-TB1	8794.03	1.0	ug/L	ND
MW6024-1	8794.04	1.0	ug/L	ND
MW6001-1	8794.05	1.0	ug/L	ND
MW4204-1	8794.06	1.0	ug/L	ND
UST-ER1	8794.10	1.0	ug/L	ND

ND = NOT DETECTED ABOVE QUANTITATION LIMIT

EPA = #EPA600/4-79-020, MARCH 1985 SM = STANDARD METHOD, 16TH EDITION



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8794.01 - .10HVS

57 EXECUTIVE PARK SOUTH, SUITE 590

ATLANTA, GA 30329

DATE: 03-19-92

ATTN: OLA AWOSIKA

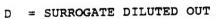
SWLO # 8794

METHOD REFERENCE: EPA 601

PROJECT: AT 510

HALOGENATED VOLATILE QA/QC SURROGATE RECOVERIES

SAMPLE I.D.	COMPOUND	PERCENT RECOVERY
JAMI ALL ALL		
8794.01	CIS-1,2-DICHLOROETHENE	96%
8794.02	CIS-1,2-DICHLOROETHENE	97%
8794.03	CIS-1, 2-DICHLOROETHENE	103%
8794.04	CIS-1,2-DICHLOROETHENE	106%
8794.05	CIS-1,2-DICHLOROETHENE	105%
8794.06	CIS-1,2-DICHLOROETHENE	96%
8794.10	CIS-1,2-DICHLOROETHENE	108%



J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

B-7

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

^{* =} SURROGATE RECOVERY OUTSIDE OF QC LIMITS



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8794.01 - .10EDB

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329

ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER SWLO #: 8794.01 - .10

METHOD REFERENCE: EPA 504.1 DATE SUBMITTED: 02-20-92 DATE EXTRACTED: 02-24-92

PROJECT: AT 510

RESULTS REPORTED IN ug/L or PARTS PER BILLION

ETHYLENE DIBROMIDE

9900	300	29		
	SWLO	DET.		
CLIENT ID	I.D	LIMIT	RESULTS	DATE ANALYZED
MW91129-1	8794.01	0.01	ND	02-24-92
MW91601-1	8794.02	0.01	ND	02-24-92
UST-TB1	8794.03	0.01	ND	02-24-92
MW6024-1	8794.04	0.01	ND	02-25-92
MW6001-1	8794.05	0.01	ND	02-25-92
MW4204-1	8794.06	0.01	ND	02-25-92
UST-ER1	8794.10	0.01	ND	02-25-92

ND = NOT DETECTED ABOVE QUANTITATION LIMIT

EPA = #EPA600/4-79-020, MARCH 1985 SM = STANDARD METHOD, 16TH EDITION



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8794.01 - ,10EDBSR

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

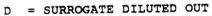
SWLO # 8794

METHOD REFERENCE: EPA 504.1

PROJECT: AT 510

ETHYLENE DIBROMIDE QA/QC SURROGATE RECOVERIES

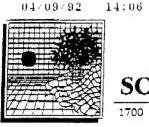
SAMPLE I.D.	COMPOUND	PERCENT RECOVERY
8794.01	1,1,2,2-TETRACHLOROETHANE	108%
8794.02	1,1,2,2-TETRACHLORSETHANE	109%
8794.03	1,1,2,2-TETRACHLOROETHANE	106%
8794.04	1,1,2,2-TETRACHLOROETHANE	107%
8794.05	1,1,2,2-TETRACHLORGETHANE	111%
8794.06	1,1,2,2-TETRACHLOROETHANE	106%
8794.10	1,1,2,2-TETRACHLOROETHANE	108%



J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

^{* =} SURROGATE RECOVERY OUTSIDE OF QC LIMITS



SOUTHWEST LAB

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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8794.01 - .10TPH

57 EXECUTIVE PARK SOUTH, SUITE 590

ATLANTA, GA 30329

ATTN: OLA AWOSIKA

DATE: 03-20-92

SAMPLE MATRIX: WATER SWLO #: 8794.01 - .10 DATE SUBMITTED: 02-20-92 DATE ANALYZED: 02-25-92

PROJECT: AT 510

METHOD REFERENCE FOR TOTAL PETROLEUM HYDROCARBON: EPA 418.1

	SWLO	DET.		
CLIENT ID	I.D	LIMIT	UNIT	RESULT
		.		
MW91129-1	8794.01	0.5	mg/L	ND
MW91601-1	8794.02	0.5	mg/L	ND
UST-TB1	8794.03	0.5	mg/L	ND
MW6024-1	8794.04	0.5	mg/L	ND
MW6001-1	8794.05	0.5	mg/L	ND
MW4204-1	8794.06	0.5	mg/L	ND
MW4204-1 DUP	8794.07	0.5	mg/L	28
MW4204-1 MS	8794.08	0.5	mg/L	25
UST-ER1	8794.10	0.5	mg/L	ND

ND = NOT DETECTED ABOVE QUANTITATION LIMIT

EPA = #EPA600/4-79-020, MARCH 1985SM = STANDARD METHOD, 16TH EDITION



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8794.01 - .10LD

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER
SWLO #: 8794.01 - .10
DATE SUBMITTED: 02-20-92
DATE ANALYZED: 03-04-92

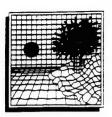
PROJECT: AT 510

METHOD REFERENCE FOR LEAD: EPA 239.2

	SWLO	DET.	***	
CLIENT ID	I.D	LIMIT	UNIT	RESULT
MW91129-1	8794.01	3.0	ug/L	26.6
MW91601-1	8794.02	3.Q	ug/L	21.4
MW6024-1	8794.04	3.0	ug/L	10.2
MW6001-1	8794.05	3.0	ug/L	ND
MW4204-1	8794.06	3.0	ug/L	6.9 J
MW4204-1 DUP	8794.07	3.0	ug/L	8.0 ブ
MW4204-1 MS	8794.08	3.0	ug/L	16.5 Ţ
UST-ER1	8794.10	3.0	ug/L	ND

ND = NOT DETECTED ABOVE QUANTITATION LIMIT

EPA = #EPA600/4-79-020, MARCH 1985 SM = STANDARD METHOD, 16TH EDITION



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8794.01BX

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER

SWLO #: 8794.01

METHOD REFERENCE: EPA 602
DATE SAMPLED : 02-19-92
DATE SUBMITTED: 02-20-92
DATE ANALYZED: 02-21-92

PROJECT: AT 510

SAMPLE ID: MW91129-1

PARAMETER	DET. LIMET	UNIT	RESULTS
GAS CHROMATOGRAPHY			
BENZENE	1.0	ug/L ug/L	ND ND
TOLUENE ETHYLBENZENE	1.0	ug/L	ND ND
XYLENES MTBE	1.0	ug/L ug/L	ND

OA/OC SURROGATE RECOVERIES

4-BROMOFLUOROBENZENE (65-135%) 94%

ND = NOT DETECTED ABOVE QUANTITATION LIMIT

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RERUN.

SW = TEST METHODS FOR EVALUATING SOLID WASTE, EPA PUBLICATION #SW846, THIRD EDITION, NOVEMBER 1986



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8794.01P

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER

SWLO #: 8794.01

DATE SUBMITTED: 02-20-92
DATE EXTRACTED: 02-28-92
DATE ANALYZED: 03-06-92
METHOD REFERENCE: EPA 610

PROJECT: AT 510 SAMPLE ID: MW91129-1

RESULTS REPORTED IN ug/1 OR Parts Per Billion (PPB)

POLYNUCLEAR AROMATIC HYDROCARBONS	DETECTION LIMIT	RESULTS
NAPHTHALENE	1.0	ND Ţ
ACENAPHTHYLENE	1.0	ND _/
ACENAPHTHENE	1.0	ND
FLUORENE	1.0	ND /
PHENANTHRENE	1.0	ND
ANTHRACENE	1.0	ND "
FLUORANTHENE	1.0	ND ***
PYRENE	1.0	ND .
BENZO(A)ANTHRACENE	1.0	ND T
CHRYSENE	1.0	ND C
BENZO(B)FLUORANTHENE	1.0	ND 📅
BENZO(K) FLUORANTHENE	1.0	ND
BENZO(A) PYRENE	1.0	ND T
DIBENZO(A, H) ANTHRACENE/	1.0	ND \mathcal{J}
INDENO(1,2,3-CD)PYRENE **	1.0	ND T
BENZO(G,H,I)PERYLENE	1.0	D J

OA/OC SURROGATE RECOVERIES

2-FLUOROBIPHENYL 102.3% p-TERPHENYL 88%

ND = NONE DETECTED ABOVE QUANTITATION LIMIT

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS

** = THESE COMPOUNDS COELUTE (AS INDICATED IN METHOD 610).

Calle a plan 2 3 1992



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8794.02BX

57 EXECUTIVE PARK SOUTH, SUITE 590

ATLANTA, GA 30329

DATE: 03-20-92

ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER

SWLO #: 8794.02

METHOD REFERENCE: EPA 602 DATE SAMPLED : 02-19-92 DATE SUBMITTED: 02-20-92 DATE ANALYZED: 02-21-92

PROJECT: AT 510 SAMPLE ID: MW91601-1

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PARAMETER	LINET	UNIT	RESULTS
GAS CHROMATOGRAPHY			
BENZENE	1.0	ug/L	ND
TOLUENE	1.0	ug/L	ND
ETHYLBENZENE	1.0	ug/L	ND
XYLENES	1.0	ug/L	ND
MTBE	1.0	ug/L	ND
MIDD			

OA/OC SURROGATE RECOVERIES

4-BROMOFLUOROBENZENE (65-135%)

96%

ND = NOT DETECTED ABOVE QUANTITATION LIMIT

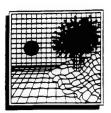
B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RERUN.

SW = TEST METHODS FOR EVALUATING SOLID WASTE, EPA PUBLICATION #SW846, THIRD

EDITION, NOVEMBER 1986



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8794.02P

57 EXECUTIVE PARK SOUTH, SUITE 590

ATLANTA, GA 30329 ATTN: OLA AWOSIKA DATE: 03-20-92

SAMPLE MATRIX: WATER

SWLO #: 8794.02

DATE SUBMITTED: 02-20-92
DATE EXTRACTED: 02-28-92
DATE ANALYZED: 03-06-92
METHOD REFERENCE: EPA 610

PROJECT: AT 510
SAMPLE ID: MW91601-1

RESULTS REPORTED IN ug/1 OR Parts Per Billion (PPB)

	<i>M</i>	2201T #6
POLYNUCLEAR AROMATIC HYDROCARBONS	DETECTION LIMIT	RESULTS
	1.0	ND 🗸
NAPHTHALENE		
ACENAPHTHYLENE	1.0	NDJ
ACENAPHTHENE	1.0	ND ~
FLUORENE	1.0	ND',
PHENANTHRENE	1.0	ND 7
	1.0	ND T
ANTHRACENE	1.0	ND \mathcal{T}
FLUORANTHENE	1.0	NDJ
PYRENE	<u>-</u>	ND T
BENZO (A) ANTHRACENE	1.0	
CHRYSENE	1.0	ND.
BENZO(B)FLUORANTHENE	1.0	ND T
BENZO(K) FLUORANTHENE	1.0	ND 🏸
BENZO(A) PYRENE	1.0	ND 🎨
DIBENZO(A, H) ANTHRACENE/	1.0	ND I
	1.0	ND 🗇
INDENO(1,2,3-CD)PYRENE **	1.0	ND 3
BENZO(G, H, I) PERYLENE	1.0	

OA/OC SURROGATE RECOVERIES

2-FLUOROBIPHENYL 95.8% p-TERPHENYL 84.8%

ND = NONE DETECTED ABOVE QUANTITATION LIMIT

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS

** = THESE COMPOUNDS COELUTE (AS INDICATED IN METHOD 610).

100



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8794.03BX

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER

SWLO #: 8794.03

METHOD REFERENCE: EPA 602
DATE SAMPLED : 02-19-92
DATE SUBMITTED: 02-20-92
DATE ANALYZED: 02-21-92

PROJECT: AT 510
SAMPLE ID: UST-TB1

PARAMETER	DET. LIMIT	UNIT	RESULTS
GAS CHROMATOGRAPHY		>	
BENZENE	1.0	ug/L	ND
TOLUENE ETHYLBENZENE	1. 0 1.0	ug/L ug/L	ND ND
XYLENES MTBE	1.0	ug/L ug/L	ND ND

OA/OC SURROGATE RECOVERIES

4-BROMOFLUOROBENZENE (65-135%) 919

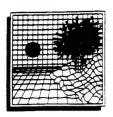
ND = NOT DETECTED ABOVE QUANTITATION LIMIT

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RERUN.

SW = TEST METHODS FOR EVALUATING SOLID WASTE, EPA PUBLICATION #SW846, THIRD EDITION, NOVEMBER 1986



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8794.04BX

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER

SWLO #: 8794.04

METHOD REFERENCE: EPA 602 DATE SAMPLED : 02-19-92 DATE SUBMITTED: 02-20-92 DATE ANALYZED:

PROJECT: AT 510 SAMPLE ID: MW6024-1

	DET.		
PARAMETER	LIMIT	UNIT	RESULTS
	7/		
GAS CHROMATOGRAPHY			
BENZENE	1.0	ug/L	ND
TOLUENE	1.0	ug/L	ND
ETHYLBENZENE	1.0	ug/L	ND
XYLENES	1.0	ug/L	ND
MTBE	1.0	ug/L	ND

OA/OC SURROGATE RECOVERIES

4-BROMOFLUOROBENZENE (65-135%)

84%

ND = NOT DETECTED ABOVE QUANTITATION LIMIT

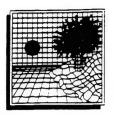
B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RERUN.

SW = TEST METHODS FOR EVALUATING SOLID WASTE, EPA PUBLICATION #SW846, THIRD EDITION, NOVEMBER 1986

B-17



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8794.04P

57 EXECUTIVE PARK SOUTH, SUITE 590

ATLANTA, GA 30329

ATTN: OLA AWOSIKA

DATE: 03-20-92

SAMPLE MATRIX: WATER

SWLO #: 8794.04

DATE SUBMITTED: 02-20-92 DATE EXTRACTED: 02-28-92 DATE ANALYZED: 03-06-92 METHOD REFERENCE: EPA 610

PROJECT: AT 510 SAMPLE ID: MW6024-1

RESULTS REPORTED IN ug/ OR Parts Per Billion (PPB)

POLYNUCLEAR AROMATIC HYDROCARBONS	DETECTION LIMIT	RESULTS
NAPHTHALENE	. 1.0	ND 🗇
ACENAPHTHYLENE	1.0	ND T
	1.0	ND T
ACENAPHTHENE	1.0	ND T
FLUORENE	1.0	ND ~
PHENANTHRENE	1.0	ND T
ANTHRACENE	1.0	ND T
FLUORANTHENE	1.0	ND
PYRENE	1.0	ND.T
BENZO(A)ANTHRACENE	1.0	NDT
CHRYSENE	1.0	ND T
BENZO(B) FLUORANTHENE	1.0	ND +
BENZO(K) FLUORANTHENE		NDJ
BENZO(A)PYRENE	1.0	
DIBENZO(A,H)ANTHRACENE/	1.0	ND I
INDENO(1,2,3-CD)PYRENE **	1.0	иDI
BENZO(G,H,I)PERYLENE	1.0	ND \mathcal{J}

OA/OC SURROGATE RECOVERIES

2-FLUOROBIPHENYL	76.5%
D-TERPHENYL	82.2%

ND = NONE DETECTED ABOVE QUANTITATION LIMIT

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS

** = THESE COMPOUNDS COELUTE (AS INDICATED IN METHOD 610).

B-18

3



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8794.05BX

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER

SWLO #: 8794.05

METHOD REFERENCE: EPA 602
DATE SAMPLED : 02-19-92
DATE SUBMITTED: 02-20-92
DATE ANALYZED: 02-21-92

PROJECT: AT 510
SAMPLE ID: MW6001-1

PARAMETER		499000000000000	et. Imp	UNIT	RESULTS
GAS CHROMATO	∵ DADUV		•		
	AVRAFIII				
BENZENE		1	.0	ug/L	ND
TOLUENE		1	.0/	ug/L	ND
ETHYLBENZENE		1	.0	ug/L	ND
XYLENES		á 1	.0	ug/L	ND
MTBE		1	.0	ug/L	ND

OA/OC SURROGATE RECOVERIES

4-BROMOFLUOROBENZENE (65-135%) 90%

ND = NOT DETECTED ABOVE QUANTITATION LIMIT

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RERUN.

SW = TEST METHODS FOR EVALUATING SOLID WASTE, EPA PUBLICATION #SW846, THIRD EDITION, NOVEMBER 1986



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CLIENT: ENGINEERING SCIENCE, INC.

SWLO #: 8794.05

REPORT: 8794.05P

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER

DATE SUBMITTED: 02-20-92 DATE EXTRACTED: 02-28-92 DATE ANALYZED: 03-06-92 METHOD REFERENCE: EPA 610

PROJECT: AT 510 SAMPLE ID: MW6001-1

RESULTS REPORTED IN ug/1 OR Parts Per Billion (PPB)

POLYNUCLEAR AROMATIC HYDROCARBONS	DETECTION LIMIT	RESULTS
NAPHTHALENE	. 1.0	ND J
ACENAPHTHYLENE	1.0	NDJ
ACENAPHTHENE	1.0	ND J
FLUORENE	1.0	ND J
PHENANTHRENE	1.0	T dn
ANTHRACENE	1.0	ND 📅
FLUORANTHENE	1.0	ND 🌣
PYRENE	1.0	$\mathtt{ND}\mathcal{T}$
BENZO(A)ANTHRACENE	1.0	NDT
CHRYSENE	1.0	ND 🚏
BENZO (B) FLUORANTHERE	1.0	ND 🖑
BENZO(K) FLUORANTHENE	1.0	ND 🖫
BENZO(A) PYRENE	1.0	ND J
DIBENZO(A, H) ANTHRACENE/	1.0	ND T
INDENO(1,2,3-CD)PYRENE **	1.0	ND \mathcal{T}
BENZO(G, H, I) PERYLENE	1.0	ND 🏹

OA/OC SURROGATE RECOVERIES

59.1% 2-FLUOROBIPHENYL 57.2% p-TERPHENYL

ND = NONE DETECTED ABOVE QUANTITATION LIMIT

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS

** = THESE COMPOUNDS COELUTE (AS INDICATED IN METHOD 610).



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8794.06BX

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER

SWLO #: 8794.06

METHOD REFERENCE: EPA 602
DATE SAMPLED : 02-19-92
DATE SUBMITTED: 02-20-92
DATE ANALYZED: 02-21-92

PROJECT: AT 510 SAMPLE ID: MW4204-1

PARAMETER	DET. LIMIT	UNIT	RESULTS
GAS CHROMATOGRAPHY		>	
BENZENE	1.0	ug/L ug/L	ND ND
TOLUENE ETHYLBENZENE	1.0 1.0	ug/L ug/L	ND ND
XYLENES MTBE	1.0	ug/L	ND

OA/OC SURROGATE RECOVERIES

4-BROMOFLUOROBENZENE (65-135%) 82%

ND = NOT DETECTED ABOVE QUANTITATION LIMIT

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RERUN.

SW = TEST METHODS FOR EVALUATING SOLID WASTE, EPA PUBLICATION #SW846, THIRD EDITION, NOVEMBER 1986

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1992



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8794.06P

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER

SWLO #: 8794.06

DATE SUBMITTED: 02-20-92
DATE EXTRACTED: 02-28-92
DATE ANALYZED: 03-06-92
METHOD REFERENCE: EPA 610

PROJECT: AT 510 SAMPLE ID: MW4204-1

RESULTS REPORTED IN ug/1 OR Parts Per Billion (PPB)

POLYNUCLEAR AROMATIC HYDROCARBONS	DETECTION LIMIT	RESULTS
NAPHTHALENE	1.0	ND T
ACENAPHTHYLENE	1.0	ND J
ACENAPHTHENE FLUORENE	1.0	ND T
PHENANTHRENE	1.0	ND T
ANTHRACENE FLUORANTHENE	1.0 1.0	ND T
PYRENE	1.0	ND T
BENZO (A) ANTHRACENE	1.0	ND Ţ ND Ţ
CHRYSENE BENZO(B)FLUORANTHENE	1.0	ND 😁
BENZO(K)FLUORANTHENE	1.0	ND ∭ ND ∭
BENZO(A)PYRENE DIBENZO(A,H)ANTHRACENE/	1.0	ND T
INDENO(1,2,3-CD)PYRENE **	1.0	ND T
BENZO(G,H,I)PERYLENE	1.0	ND 🧬

OA/OC SURROGATE RECOVERIES

2-FLUOROBIPHENYL p-TERPHENYL 74.6%

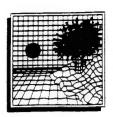
ND = NONE DETECTED ABOVE QUANTITATION LIMIT

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS

** = THESE COMPOUNDS COELUTE (AS INDICATED IN METHOD 610).



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8794.10BX

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER

SWLO #: 8794.10

METHOD REFERENCE: EPA 602
DATE SAMPLED : 02-19-92
DATE SUBMITTED: 02-20-92
DATE ANALYZED: 02-21-92

PROJECT: AT 510
SAMPLE ID: UST-ER1

	DET	M00000	
PARAMETER	LIM	IT UNIT	RESULTS
	# Table 1	•	
GAS CHROMATOGI	RAPHY		
BENZENE	1.0	ug/L	ND
TOLUENE	1.0	ug/L	ND
ETHYLBENZENE	1.0	ug/L	ND
XYLENES	1.0	ug/L	ND
388	1.0	ug/L	ND
MTBE			
	- Walter		

OA/OC SURROGATE RECOVERIES

4-BROMOFLUOROBENZENE (65-135%) 84%

ND = NOT DETECTED ABOVE QUANTITATION LIMIT

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RERUN.

SW = TEST METHODS FOR EVALUATING SOLID WASTE, EPA PUBLICATION #SW846, THIRD

EDITION, NOVEMBER 1986



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8794.10P

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER

SWLO #: 8794.10

DATE SUBMITTED: 02-20-92
DATE EXTRACTED: 02-28-92
DATE ANALYZED: 03-06-92
METHOD REFERENCE: EPA 610

PROJECT: AT 510
SAMPLE ID: UST-ER1

RESULTS REPORTED IN ug/1 OR Parts Per Billion (PPB)

The state of the s		
POLYNUCLEAR AROMATIC HYDROCARBONS	DETECTION LIMIT	RESULTS
NAPHTHALENE	. 1.0	ND J
ACENAPHTHYLENE	1.0	ND T
ACENAPHTHENE	1.0	ND T
FLUORENE	1.0	NDT
PHENANTHRENE	1.0	ND 🔊
ANTHRACENE	1.0	ND T
FLUORANTHENE	1.0	ND 👅
PYRENE	1.0	ND J
BENZO(A)ANTHRACENE	1.0	ND Ţ
CHRYSENE	1.0	ND T
BENZO(B) FLUORANTHENE	1.0	ND T
BENZO(K)FLUORANTHENE	1.0	ND 😲
BENZO(A)PYRENE	1.0	ND T
DIBENZO(A, H) ANTHRACENE/	1.0	ND 🗸
INDENO(1,2,3-CD)PYRENE **	1.0	NDJ
BENZO(G, H, I) PERYLENE	1.0	NDI

OA/OC SURROGATE RECOVERIES

2-FLUOROBIPHENYL	87.9%
D-TERRHENYI.	99.2%

ND = NONE DETECTED ABOVE QUANTITATION LIMIT

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS

** = THESE COMPOUNDS COELUTE (AS INDICATED IN METHOD 610).

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ANALYTICAL REPORT

ENGINEERING-SCIENCE INC. 57 EXECUTIVE PARK SOUTH ATLANTA, GEORGIA 30392

REPORT: 8794

REPORT DATE: 03/13/92

SWLO IDENTIFICATION

SAMPLE NO.:

8794.01-8794.10

DATE RECEIVED:

02/20/92

OA/OC

DESCRIPTION PARAMETER RESULTS

METHOD BLANK 03/04/92 LEAD < 3.0 ug/L

BLANK SPIKE 03/04/92 LEAD 96% RECOVERY

MATRIX SPIKE MW204-1 LEAD 48% RECOVERY

DUPLICATE MW204-1 LEAD 14.76% RPD



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8794a

57 EXECUTIVE PARK SOUTH, SUITE 590

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

DATE: 03-19-92

SAMPLE MATRIX: WATER SWLO #: METHOD BLANK DATE ANALYZED: 02-24-92 METHOD REFERENCE: EPA 601

PROJECT: AT 510 SAMPLE ID: BLANK

RESULTS REPORTED IN ug/L OR Parts Per Billion (PPB)

HALOGENATED VOLATILES

DET. LIMIT

RESULTS

1,2-DICHLOROETHANE

1.0

ND

OA/OC SURROGATE RECOVERIES

CIS-1,2-DICHLOROETHENE (65%-135%) 94%

ND = NOT DETECTED ABOVE QUANTITATION LIMIT

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS

RECULVISION RECUL



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8794b

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-19-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER

SWLO # 8794.08 - .09 (MS/MSD) DATE ANALYZED : 02-24-92 METHOD REFERENCE: EPA 601

PROJECT: AT 510

SAMPLE ID: MW4202-1 (MS/MSD)

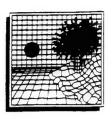
HALOGENATED VOLATILES MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

	SPIKE	SAMPLE		MS	AMT FOUND		
	COMC.		MS CONC.	PERCENT		RECOVERY	
COMPOUND	(ug/L)	(ug/L)	(ug/L)	RECOVERY	(ug/L)	MSD	RPD
1,2-DICHLOROETHANE	20.0	Ó	17.2	86.0	18.4	92.0	6.7

SURROGATE RECOVERIES

MS CIS-1,2-DICHLOROETHENE 100%
MSD CIS-1,2-DICHLOROETHENE 97%

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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8794c

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER SWLO #: METHOD BLANK

METHOD REFERENCE: EPA 602 DATE ANALYZED: 02-21-92

PROJECT: AT 510 SAMPLE ID: BLANK

	DET.	***	
PARAMETER	LIMIT	UNIT	RESULTS
GAS CHROMATOGRAPHY			
BENZENE	1.0	ug/L	ND
TOLUENE	1.0	ug/L	ND
ETHYLBENZENE	1.0	ug/L	ND
XYLENES	1.0	ug/L	ND
MTBE	10.0	ug/L	ND

QA/OC SURROGATE RECOVERIES

4-BROMOFLUOROBENZENE (65-135%) 86%

ND = NOT DETECTED ABOVE QUANTITATION LIMIT

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

= SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RERUN.

SW = TEST METHODS FOR EVALUATING SOLID WASTE, EPA PUBLICATION #SW846, THIRD EDITION, NOVEMBER 1986



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8794d

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

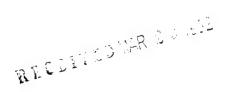
SAMPLE MATRIX: WATER
DATE ANALYZED: 02-21-92
SWLO #: 8794 (MS/MSD)

PROJECT: AT 510
SAMPLE ID: MW4204-1

BTEX MATRIX SPIKE/MATRIX SPIKE DUPLICATE

	SPIKE CONC.	SAMPLE CONC.	MATRIX SPIKE CONC. (ug/L)	PERCENT RECOVERY
	10.0	0	9.9	99.3%
BENZENE	10.0 1 0.0	0	9.3	93.1%
TOLUENE ETHYLBENZENE	10.0	o o	9.4	94.4%
TOTAL XYLENES	97555	0	29.4	98.1%
MTBE	30.0 40.0	0	44.6	111.5%

	MATRIX SPIKE DUP NSD CONC. (ug/L)	PERCENT REC. (ug/L)	RECOVERY PERCENT DIFFERENCE	
BENZENE TOLUENE ETHYLBENZENE TOTAL XYLENES MTBE	10.1 9.5 9.8 30.4 42.4	100.9% 95.4% 98.0% 101.3% 106.0%	1.60% 2.44% 3.74% 3.21% 5.1%	





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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8794e

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER SWLO #: METHOD BLANK

METHOD REFERENCE: EPA 504.1
DATE EXTRACTED: 02-24-92
DATE ANALYZED: 02-24-92

PROJECT: AT 510

RESULTS REPORTED IN ug/L or PARTS PER BILLION

DET

PARAMETER LIM

RESULT

ETHYLENE DIBROMIDE

0.01

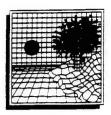
ND

OA/OC SURROGATE RECOVERY

1,1,2,2-TETRACHLOROETHANE 103%

ND = NOT DETECTED ABOVE QUANTITATION LIMIT

EPA = #EPA600/4-79-020, MARCH 1985 SM = STANDARD METHOD, 16TH EDITION RECEIVED WAY 30 1995



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8794f

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER

SWLO #: 8794 LCS PROJECT: AT 510

LABORATORY CONTROL SPIKE

SPIKE CONC. (ug/L)

CONTROL SAMPLE CONC. (ug/L)*

0

LCS CONC. LCS PERCENT (ug/L)*

RECOVERY

ETHYLENE DIBROMIDE

1.67

101.5%

= DILUTION FACTOR NOT APPLIED TO THESE CONCENTRATIONS



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8794g

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER

SWLO # 8794.08 - .09 (MS/MSD)
DATE EXTRACTED: 02-24-92
DATE ANALYZED: 02-25-92
METHOD REFERENCE: EPA 601

PROJECT: AT 510

SAMPLE ID: MW4202-1 (MS/MSD)

ETHYLENE DIBROWIDE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

	comc.	SAMPLE CONC.			AMT FOUND MSD CONC.	RECOVERY	
COMPOUND	(ug/k)	(ug/L)	(ug/L)	RECOVERY	(ug/L)	MSD	RPD
ETHYLENE DIBROMIDE	1.67	0	1.62	97	1.80	108	11

SURROGATE RECOVERIES

MS CIS-1,2-DICHLOROETHENE 106%
MSD CIS-1,2-DICHLOROETHENE 121%

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ENGINEERING SCIENCE, INC.

REPORT: 8794h

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329

ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER SWLO #: METHOD BLANK

DATE EXTRACTED: 02-28-92 DATE ANALYZED : 03-06-92 METHOD REFERENCE: EPA 610

PROJECT: AT 510

SAMPLE ID: WBLK022892-01

RESULTS REPORTED IN ug/l OR Parts Per Billion (PPB)

POLYNUCLEAR AROMATIC HYDROCARBONS	ETECTION LIMIT	RESULTS
NAPHTHALENE	1.0	ND
ACENAPHTHYLENE	1.0	ND
ACENAPHTHENE	1.0	ND
FLUORENE	1.0	ND
PHENANTHRENE	1.0	ND
ANTHRACENE	1.0	ND
FLUORANTHENE	1.0	ND
PYRENE	1.0	ND
BENZO(A)ANTHRACENE	1.0	ND
CHRYSENE	1.0	ND
BENZO(B) FLUORANTHENE	1.0	ND
BENZO(K) FLUORANTHENE	1.0	ND
	1.0	ND
BENZO(A) PYRENE	1.0	ND
DIBENZO(A, H) ANTHRACENE/	1.0	ND
INDENO(1,2,3-CD)PYRENE **	1.0	ND
BENZO(G,H,I)PERYLENE	1.0	ND

OA/OC SURROGATE RECOVERIES

90.7% 2-FLUOROBIPHENYL 78.6% p-TERPHENYL

ND = NONE DETECTED ABOVE QUANTITATION LIMIT

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS

** = THESE COMPOUNDS COELUTE (AS INDICATED IN METHOD 610).



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8794i

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER
SWLO #: 8794 (MS/MSD)
DATE EXTRACTED: 02-28-92
DATE ANALYZED : 03-06-92

PROJECT: AT 510

SAMPLE ID: MW4204-1 (MS/MSD)

WATER PAH MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

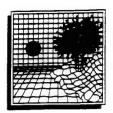
			~~~ ~	W.			
	SPIKE	AMT FOUND	AMT FOUND	MS	AMT FOUND	PERCENT	
	ADDED	SAMPLE	MS	PERCENT	MSD	RECOVERY	PERCENT
COMPOUND	(ug/1)	(ug/1)	(ug/1)	RECOVERY	(ug/1)	MSD	RPD
COMPOUND				¥			
NAPTHALENE	10.0	б	7.6	76.2	10.6	106.2	33.0
	10.0	0	7.9	79.0	10.8	108.0	30.9
ACENAPTHYLENE	10.0	ď	2.9	78.8	10.8	107.9	31.1
ACENAPTHENE	100000	0	8.6	85.9	11.9	119.4	32.6
FLUORENE	10.0	•	8.6	86.4	12.1	121.2	33.6
PHENANTHRENE	10.0			87.4	11.9	118.5	30.3
ANTHRACENE	10.0	0	8.7				31.4
FLUORANTHENE	10.0	Q	8.4	84.1	11.5	115.4	
PYRENE	10.0	0	8.4	84.2	11.7	117.4	32.9
BENZO-(A)-ANTHRANCENE	10.0	0	7.5	ຸ75₊2	9.9	99.1	27.5
CHRYSENE	10.0	0	7.0	70.1	9.3	93.4	28.5
BENZO-(B)-FLUORANTHENE	10.0	0	8.1	81.1	10.8	107.7	28.2
BENZO-(K)-FLUORANTHENE	10.0	0	8.4	84.2	11.3	113.2	29.4
	10.0	Ö	8.4	84.2	11.1	110.6	27.1
BENZO-(A)-PYRENE		0	8.3	41.3	11.7	58.5	34.5
DIBENZO(A, H) ANTHRACENE		J	0.3	41.5	****	, 50.5	
INDENO(1,2,3-CD)PYRE					10.0	110 5	35.1
BENZO(G,H,I)PERYLENE	10.0	0	8.4	83.9	12.0	119.5	33.1

### OA/OC SURROGATE RECOVERIES

	MS	MSD
2-FLUOROBIPHENYL	76.7%	106.7%
p-TERPHENYL	91.7%	110.0%

337

*VALUES OUTSIDE OF QC LIMITS



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8794j

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER

SWLO #: METHOD BLANK

DATE ANALYZED: 02-25-92

METHOD REFERENCE: EPA 418.1

PROJECT: AT 510

SAMPLE ID: WBLK02249201

RESULTS REPORTED IN mg/L OR Parts Per Billion (PPB)

PARAMETER LIMIT RESULTS
TPH 0.5 ND

ND = NOT DETECTED ABOVE QUANTITATION LIMIT

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS

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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8794k

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER
DATE ANALYZED: 02-25-92
SWLO #: 8794 (MS/MSD)

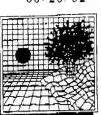
PROJECT: AT 510 SAMPLE ID: MW4204-1

### TPH MATRIX SPIKE MATRIX SPIKE DUFLICATE

SPIKE CONC. SAMPLE CONC. CONC. PERCENT
(ug/L) (ug/L) (ug/L) RECOVERY

TPH 31.0 0 25.1 81.0%

WE CAN WEST WAY TO BE SEEN THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE SEED OF THE



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CLIENT: ENGINEERING SCIENCE, INC.

57 EXECUTIVE PARK SOUTH, SUITE 590

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

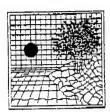
SAMPLE MATRIX: WATER DATE ANALYZED: 02-25-92 SWLO #: 8794 (M5/MSD)

PROJECT: AT 510 SAMPLE ID: MW4204-1 REPORT: 8794k

DATE: 03-20-92

# TPH MATRIX SPIKE/MATRIX SPIKE DUPLICATE

	SPIRE CONC. (ug/L)	SAMPLE CONC.	MATRIX SPIKE CONC. (ug/L)	PERCENT RECOVERY	
ТРН	31.0	0	25.1	81.0%	
	MSD CONC. (ug/L)*	MSD PERCENT RECOVERY	RECOVERY DIFFER		
TPH	27.9	90%	10	).6%	

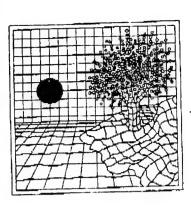


FAX NUMBER 918-251-2599

# FAX COVER SHEET

DATE: 3-26-92

TO:	NAME: Andy L CLIENT: Engineering	Science, Inc.
	SUBJECT: Correct FAX # 1-404-	125 - 8369
FROMI	NAME: Dary/ LABORATORY: S	Alstatt.
COMMENTS:	<ul> <li>For your comments</li> <li>Please call me about this</li> <li>Information only</li> </ul>	As you requested As we discussed Review and forward
number of pages:	3 (Including this cove	er page)
SPECIAL Instructions: 	Andy, The originals untl	follow by twosika
		Daryl,
	ve any problems with this transmis	



March 26, 1992

ola Awosika ENGINEERING SCIENCE, INC. 57 Executive Park South, Suite 590 Atlanta, GA 30329

Project: AT 510 SWLO Episode #: 8794.01 - 8794.10

Dear Mr. Awosika:

Enclosed we are submitting the corrected TPH MS/MSD report for your samples received in our laboratory on February 20, 1992 for the above-captioned project. We regret any 1992 for the above-captioned project. inconvenience this may have caused.

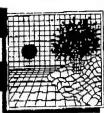
If, in your review, you should have any questions or require additional information, please call.

Sincerely,

Daryl Alstatt Project Officer

DA/rb

Enclosures



1700 West Albany • Broken Arrow, Oklahoma 74012 • Office (918) 251-2858 • Fax (918) 251-2858

REPORT: 8794k

DATE: 03-20-92

CLIENT: ENGINEERING SCIENCE, INC.

57 EXECUTIVE PARK SOUTH, SUITE 590

ATLANTA, GA 30329

ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER DATE ANALYZED: 02-25-92 SWLO #: 8794 (MS/MSD)

PROJECT: AT 510 SAMPLE ID: MW4204-1

### TPH MATRIX SPIKE/MATRIX SPIKE DUPLICATE

	SPIKE CONC. (ug/L)	SAMPLE CONC.	MATRIX SPIK CONC. (ug/L)	PERCENT RECOVERY	
ТРН	31.0	0	25.1	81.0%	
	MSD CONC. (ug/L)*	MSD PERCENT RECOVERY		Y PERCENT PERENCE	
ТРН	27.9	90%		10.6%	

ANALYTICAL DATA BATCH 8803

### MEMORANDUM

March 30, 1992

To:

File

From:

J. A. Banton

Subject:

Eglin AFB, Job No. AT510.04

Data Review, UST Sites

Batch 8803

TPH (E418.1) analyses met QA/QC criteria for holding times, blanks, and matrix spike/matrix spike duplicates.

BETX and MTBE (E602) analyses met QA/QC criteria for holding times, blanks, matrix spike/matrix spike duplicate, and surrogate recoveries. Samples MW3021-1 and UST-ER2 had positive results that were not confirmed by a second column analysis. These positive results were flagged "JN" due to this problem. Benzene results failed to meet USAF maximum allowable detection limits; however, the detection limits did meed Florida petroleum contamination site cleanup criteria maximum allowable detection limits.

EDB (E504) analyses met QA/QC criteria for holding times, LCS, matrix spike/matrix spike duplicate, and surrogate recoveries.

Lead analyses met QA/QC criteria for holding times and matrix spike/matrix spike duplicates.

1,2-DCE (E601) analyses met QA/QC criteria for holding times, blanks, matrix spike/matrix spike duplicate, and surrogate recoveries.

AT510\923J189

Memorandum to File Page 2 March 30, 1992

PAH (E610) analyses met criteria for blanks and surrogate recoveries. Samples MW3021-1, MW981-1, MW981-1, MW792-1, and UST-ER2 exceeded holding time criteria. All compounds in the associated samples were flagged to this problem.

ENGINEERING-SCIENCE, INC.

J. A. Banton

Chemist, ES Atlanta

# ENGINEERING-SCIENCE CHAIN OF CUSTODY RECORD

#15,0.04 Eglin AFB UST 5; tes  BATT THE SULVENCY  DATE THE BELOWERED CONTINENT  2-20-92 0835 MW 3021-1  1005 UST- TB2 Trip Blank 2  1015 MW 792-1  9		SHIP TO:	
125 (Blomenia)  Man Suvency  The Suvency  0835 MW3021-1  1005 UST-TB2 Trip Slark 2  1015 MW792-1  9		Scuthurst Lab	
The sweezy  The sweezy  0835 MW3021-1  1005 UST-782 Trip Black 2  1015 MW481-1  1125 MW792-1	ANALYBES NECKWINED		
1706 MW3021-1 00835 MW3021-1 0000000000000000000000000000000000			
1005 UST- TB2 Trip Black 2 1015 MW981-1 A		MATPIC REMARKS	
MST-732 Trip Black 2 MW981-1 A MW792-1 9	9 *XXXXXXXX	& And whe Method	
MW981-1 MW792-1	2 MXXX		
MW792-1		4-50303	1 h. har
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		MIRE SOJO	
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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8803.01 - .05HV

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER
SWLO #: 8803.01 - .05
DATE SUBMITTED: 02-21-92
DATE ANALYZED: 02-24-92

PROJECT: AT 510

METHOD REFERENCE FOR 1,2-DICHLOROETHAME: EPA 601

	SWLO DESE.		
CLIENT ID	I.D LIMIT	UNIT	RESULT
MW3021-1	8803.01 1.0	ug/L	ND
UST-TB2	8803.02 1.0	ug/L	ND
MW981-1	8803.03 1.0	ug/L	ND
MW792-1	8803.04 1.0	ug/L	ND
UST-ER2	8803.05 1.0	ug/L	ND
333			

ND = NOT DETECTED ABOVE QUANTITATION LIMIT

EPA = #EPA600/4-79-020, MARCH 1985 SM = STANDARD METHOD, 16TH EDITION



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8803.01 - .05HVS

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SWLO # 8803

METHOD REFERENCE: EPA 601

PROJECT: AT 510

### HALOGENATED VOLATILE QA/QC SURROGATE RECOVERIES

SAMPLE I.D.	COMPOUND	PERCENT RECOVERY
		>
8803.01	CIS-1,2-DICHLOROETHENE	106%
8803.02	CIS-1,2-DICHLOROETHENE	100%
8803.03	CIS-1,2-DICHLOROETHENE	97%
8803.04	CIS-1,2-DICHLOROETHENE	105%
8803.05	CIS-1,2-DICHLOROETHENE	94%

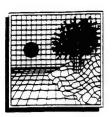


D = SURROGATE DILUTED OUT

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8803.01 - .05EDB

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER SWLO #: 8803.01 - .05

METHOD REFERENCE: EPA 504.1
DATE SUBMITTED: 02-21-92
DATE EXTRACTED: 02-24-92
DATE ANALYZED: 02-25-92

PROJECT: AT 510

RESULTS REPORTED IN ug/L or PARTS PER BILLION

### ETHYLENE DIBROMIDE

	SWLO	DET.	
CLIENT ID	I.D	LIMIT	RESULTS
MW3024-1	8803.01	0.01	ND
UST-TB2	8803.02	0.01	ND
MW981-1	8803.03	0.01	ND
MW792-1	8803.04	0.01	ND
UST-ER2	8803.05	0.01	ND

ND = NOT DETECTED ABOVE QUANTITATION LIMIT

EPA = #EPA600/4-79-020, MARCH 1985 SM = STANDARD METHOD, 16TH EDITION Re P. C. A. P. C. C. Mark J. C. 1832



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8803.01 - .05EDBSR

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

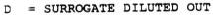
SWLO # 8803

METHOD REFERENCE: EPA 504.1

PROJECT: AT 510

#### ETHYLENE DIBROMIDE QA/QC SUBROGATE RECOVERIES

SAMPLE I.D.	COMPOUND	PERCENT RECOVERY
8803.01	1,1,2,2-TETRACHLOROETHANE	109%
8803.02	1,1,2,2-TETRACHLOROETHANE	109%
8803.03	1,1,2,2-TETRACHLOROETHANE	110%
8803.04	1,1,2,2-TETRACHLOROETHANE	110%
8803.05	1,1,2,2-TETRACHLOROETHANE	108%



J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8803.01 - .05LD

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER
SWLO #: 8803.01 - .05
DATE SUBMITTED: 02-21-92
DATE ANALYZED: 03-04-92

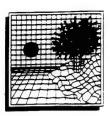
PROJECT: AT 510

METHOD REFERENCE FOR LEAD: EPA 239.2

	SWLO DET.		
CLIENT ID	I.D LIMIT	UNIT	RESULT
MW3021-1	8803.01 3. <b>p</b>	ug/L	ND
MW981-1	8803.03 3.0	ug/L	5.4
MW792-1	8803.04 3.0	ug/L	142
UST-ER2	8803.05 3.0	ug/L	ND

ND = NOT DETECTED ABOVE QUANTITATION LIMIT

EPA = #EPA600/4-79-020, MARCH 1985 SM = STANDARD METHOD, 16TH EDITION The state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the s



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8803.01 - .05TPH

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER
SWLO #: 8803.01 - .05
DATE SUBMITTED: 02-21-92
DATE ANALYZED: 02-25-92

PROJECT: AT 510

METHOD REFERENCE FOR TOTAL PETROLEUM HYDROCARBON: EPA 418.1

	SWLO DET.		
CLIENT ID	I.D LIMIT	UNIT	RESULT
MW3021-1	8803.01 0.5	mg/L	ND
MW981-1	8803.03 0.5	mg/L	0.6
MW792-1	8803.04 0.5	mg/L	ND
UST-ER2	8803.05 1.0	mg/L	ND
	- Way		

ND = NOT DETECTED ABOVE QUANTITATION LIMIT

EPA = #EPA600/4-79-020, MARCH 1985 SM = STANDARD METHOD, 16TH EDITION



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8803.01BX

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER

SWLO #: 8803.01

METHOD REFERENCE: EPA 602 DATE SAMPLED : 02-20-92 DATE SUBMITTED: 02-21-92 DATE ANALYZED:

PROJECT: AT 510 SAMPLE ID: MW3021-1

21216667			ET. IMET		UNIT	RESU	LTS
PARAMETER			11.5				
GAS CHROMATOGR	APHY			· ·			
BENZENE		1	0		ug/L	ND	
TOLUENE		1	0		ug/L		J;
ETHYLBENZENE		_	0		ug/L	ND	
XYLENES		1	0		ug/L	ND	
MTBE		1	0		ug/L	ND	

#### OA/OC SURROGATE RECOVERIES

4-BROMOFLUOROBENZENE (65-135%)

82%

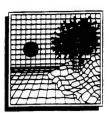
ND = NOT DETECTED ABOVE QUANTITATION LIMIT

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RERUN.

SW = TEST METHODS FOR EVALUATING SOLID WASTE, EPA PUBLICATION #SW846, THIRD EDITION, NOVEMBER 1986



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8803.01P

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329

ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER

SWLO #: 8803.01

DATE SUBMITTED: 02-21-92
DATE EXTRACTED: 02-28-92
DATE ANALYZED: 03-06-92
METHOD REFERENCE: EPA 610

PROJECT: AT 510 SAMPLE ID: MW3021-1

RESULTS REPORTED IN ug/1 OR Parts Per Billion (PPB)

	****. ///	
POLYNUCLEAR AROMATIC HYDROCARBONS	DETECTION LIMIT	RESULTS
NAPHTHALENE	1.0	ND 🖑
ACENAPHTHYLENE	1.0	ND 🚏
ACENAPHTHENE	1.0	ND J
FLUORENE	1.0	ND 🛫
PHENANTHRENE	1.0	ND **
ANTHRACENE	1.0	ND 🔭
FLUORANTHENE	1.0	2.0
PYRENE	1.0	ND J
BENZO(A)ANTHRACENE	1.0	ND J
CHRYSENE	1.0	NDJ
BENZO(B) FLUORANTHENE	1.0	ND Ţ
BENZO(K) FLUORANTHENE	1.0	ИDJ
BENZO(A) PYRENE	1.0	NDT
DIBENZO(A, H) ANTHRACENE/	1.0	ND
INDENO(1,2,3-CD)PYRENE **	1.0	ND ブ
BENZO(G.H.I)PERYLENE	1.0	ND J

#### OA/OC SURROGATE RECOVERIES

2-FLUOROBIPHENYL 82.6% p-TERPHENYL 72%

ND = NONE DETECTED ABOVE QUANTITATION LIMIT

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS

** = THESE COMPOUNDS COELUTE (AS INDICATED IN METHOD 610).

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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8803.01PC

57 EXECUTIVE PARK SOUTH, SUITE 590

ATLANTA, GA 30329

DATE: 03-20-92

ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER

SWLO #: 8803.01

DATE SUBMITTED: 02-21-92 DATE EXTRACTED: 02-28-92 DATE ANALYZED: 03-19-92 METHOD REFERENCE: EPA 610

PROJECT: AT 510 SAMPLE ID: MW3021-1

RESULTS REPORTED IN ug/1 OR Parts Per Billion (PPB)

POLYNUCLEAR AROMATIC HYDROCARBONS	DETECTION LIMIT	RESULTS
NAPHTHALENE	2.8	ND J
ACENAPHTHYLENE	3.6	ир Д
ACENAPHTHENE	4.3	ND
FLUORENE	0.3	ND
PHENANTHRENE	0.9	ND
ANTHRACENE	1.1	ND Ţ
FLUORANTHENE	0.3	ND T
PYRENE	0.5	ND ₹
BENZO(A)ANTHRACENE	0.02	$ND \mathcal{J}$
CHRYSENE	0.2	NDJ
BENZO(B) FLUORANTHENE	0.03	ND J
BENZO(K) FLUORANTHENE	0.03	ND 🍑
BENZO(A) PYRENE	0.03	ND 🖑
DIBENZO(A, H) ANTHRACENE/	0.05	$\mathtt{ND}\mathcal{J}$
INDENO(1,2,3-CD)PYRENE **	0.08	NDJ
BENZO(G,H,I)PERYLENE	0.12	ND Ţ

#### OA/OC SURROGATE RECOVERIES

48% 2-FLUOROBIPHENYL p-TERPHENYL 36%

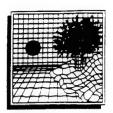
ND = NONE DETECTED ABOVE QUANTITATION LIMIT

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS

** = THESE COMPOUNDS COELUTE (AS INDICATED IN METHOD 610).



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8803.02BX

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER

SWLO #: 8803.02

METHOD REFERENCE: EPA 602
DATE SAMPLED : 02-20-92
DATE SUBMITTED: 02-21-92
DATE ANALYZED: 02-21-92

PROJECT: AT 510
SAMPLE ID: UST-TB2

PARAMETER			DET. LIMET	UNIT	RESULTS
GAS CHROMATO	GRAPHY		*	<b>&gt;</b>	
BENZENE			1.0	ug/L	ND
TOLUENE			1.0	ug/L	ND
ETHYLBENZENE	,	*****	1.0	ug/L	ND
XYLENES	•	1	1.0	ug/L	ND
MTBE			1.0	ug/L	ND
MIBE				2.	

#### OA/OC SURROGATE RECOVERIES

4-BROMOFLUOROBENZENE (65-135%) 86%

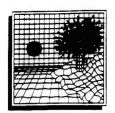
ND = NOT DETECTED ABOVE QUANTITATION LIMIT

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RERUN.

SW = TEST METHODS FOR EVALUATING SOLID WASTE, EPA PUBLICATION #SW846, THIRD EDITION, NOVEMBER 1986



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8803.03BX

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER

SWLO #: 8803.03

METHOD REFERENCE: EPA 602
DATE SAMPLED : 02-20-92
DATE SUBMITTED: 02-21-92
DATE ANALYZED: 02-21-92

PROJECT: AT 510 SAMPLE ID: MW981-1

PARAMETER		DET. LIMIT	UNIT	RESULTS
GAS CHROMATO	GRAPHY		*	
BENZENE		1.0	ug/L ug/L	ND ND
TOLUENE ETHYLBENZENE		1.0	ug/L ug/L	ND ND
XYLENES MTBE		1.0	ug/L	ND

#### OA/OC SURROGATE RECOVERIES

4-BROMOFLUOROBENZENE (65-135%) 87%

ND = NOT DETECTED ABOVE QUANTITATION LIMIT

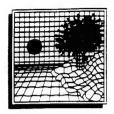
B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RERUN.

SW = TEST METHODS FOR EVALUATING SOLID WASTE, EPA PUBLICATION #SW846, THIRD

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REPORT: 8803.03P

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER

SWLO #: 8803.03

DATE SUBMITTED: 02-21-92
DATE EXTRACTED: 02-28-92
DATE ANALYZED: 03-06-92
METHOD REFERENCE: EPA 610

PROJECT: AT 510 SAMPLE ID: MW981-1

RESULTS REPORTED IN ug/1 OR Parts Per Billion (PPB)

POLYNUCLEAR AROMATIC HYDROCARRONS	DETECTION LIMIT	RESULTS	
NAPHTHALENE	1.0	ND.T	
ACENAPHTHYLENE ACENAPHTHENE	1.0	ND	
FLUORENE PHENANTHRENE	1.0	NDJ NDJ	
ANTHRACENE FLUORANTHENE	1.0	ND T	
PYRENE BENZO(A)ANTHRACENE	1.0	ND.	- 1
CHRYSENE BENZO(B)FLUORANTHENE	1.0	ND V	1
BENZO(K) FLUORANTHENE BENZO(A) PYRENE	1.0	ND√ ND√	-
DIBENZO(A, H) ANTHRACENE/	1.0	ND T	ا". مين
INDENO(1,2,3-CD)PYRENE ** BENZO(G,H,I)PERYLENE	1.0	$\mathtt{ND}\mathcal{T}$	ywys parting

#### OA/OC SURROGATE RECOVERIES

2-FLUOROBIPHENYL

106.7%

p-TERPHENYL

105.1%

ND = NONE DETECTED ABOVE QUANTITATION LIMIT

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS

** = THESE COMPOUNDS COELUTE (AS INDICATED IN METHOD 610).



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8803.04BX

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER

SWLO #: 8803.04

METHOD REFERENCE: EPA 602 DATE SAMPLED : 02-20-92 DATE SUBMITTED: 02-21-92 DATE ANALYZED:

PROJECT: AT 510 SAMPLE ID: MW792-1

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PARAMETER	LINEST	UNIT	RESULTS
	<i>-</i> /		
GAS CHROMATOGRAPHY			
BENZENE	1.0	ug/L	ND
TOLUENE	1,0	ug/L	ND
ETHYLBENZENE	1.0	ug/L	ND
XYLENES		ug/L	ND
MTBE	1.0	ug/L	ND
AIDE			

#### OA/OC SURROGATE RECOVERIES

4-BROMOFLUOROBENZENE (65-135%)

85%

ND = NOT DETECTED ABOVE QUANTITATION LIMIT

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RERUN.

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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8803.04P

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329

ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER

SWLO #: 8803.04

DATE SUBMITTED: 02-21-92
DATE EXTRACTED: 02-28-92
DATE ANALYZED: 03-06-92
METHOD REFERENCE: EPA 610

PROJECT: AT 510 SAMPLE ID: MW792-1

RESULTS REPORTED IN ug/L OR Parts Per Billion (PPB)

POLYNUCLEAR AROMATIC HYDROCARBONS	DETECTION LIMIT	RESULTS
NAPHTHALENE	1.0	ND T
ACENAPHTHYLENE	1.0	ND J
ACENAPHTHENE	1.0	NDJ
FLUORENE	1.0	ND 😍
PHENANTHRENE	1.0	ND 📑
ANTHRACENE	1.0	ND T
FLUORANTHENE	1.0	ND T
PYRENE	1.0	ND T
BENZO(A)ANTHRACENE	1.0	ND J
CHRYSENE	1.0	ND
BENZO(B) FLUORANTHENE	1.0	NDŢ
BENZO(K) FLUORANTHENE	1.0	ND 🖑
BENZO(A) PYRENE	1.0	NDJ
DIBENZO(A, H) ANTHRACENE/	1.0	ND
INDENO(1,2,3-CD)PYRENE **	1.0	NDJ
BENZO(G,H,I)PERYLENE	1.0	ND

#### OA/OC SURROGATE RECOVERIES

2-FLUOROBIPHENYL p-TERPHENYL 103.0%

ND = NONE DETECTED ABOVE QUANTITATION LIMIT

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS

** = THESE COMPOUNDS COELUTE (AS INDICATED IN METHOD 610).

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B-56



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8803.05BX

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER

SWLO #: 8803.05

METHOD REFERENCE: EPA 602 DATE SAMPLED : 02-20-92 DATE SUBMITTED: 02-21-92 DATE ANALYZED:

PROJECT: AT 510 SAMPLE ID: UST-ER2

DET	_	
	•	

PARAMETER	344.301	UNIT	RESULTS
GAS CHROMATOGRAPHY			
BENZENE	1.0	ug/L	ND
TOLUENE	1.0	ug/L	ND
ETHYLBENZENE	1.0	ug/L	ND
XYLENES	1.0	ug/L	0.7 J
MTBE	1.0	ug/L	ND

#### OA/OC SURROGATE RECOVERIES

4-BROMOFLUOROBENZENE (65-135%) 82%

ND = NOT DETECTED ABOVE QUANTITATION LIMIT

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RERUN.

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EDITION, NOVEMBER 1986

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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8803.05P

2

57 EXECUTIVE PARK SOUTH, SUITE 590

ATLANTA, GA 30329

DATE: 03-20-92

ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER

SWLO #: 8803.05

DATE SUBMITTED: 02-21-92 DATE EXTRACTED: 02-28-92 DATE ANALYZED: 03-06-92 METHOD REFERENCE: EPA 610

PROJECT: AT 510 SAMPLE ID: UST-ER2

RESULTS REPORTED IN ug/L OR Parts Per Billion (PPB)

POLYNUCLEAR AROMATIC HYDROCARBONS	DETECTION LIMIT	RESULTS
POLITICILEAR AROMATIC INDICATE		
NAPHTHALENE	1.0	ND 🍑
ACENAPHTHYLENE	1.0	NDJ
ACENAPHTHENE	1.0	NDT
FLUORENE	1.0	ND T
PHENANTHRENE	1.0	NDT
ANTHRACENE	1.0	ND
FLUORANTHENE	1.0	NDJ
PYRENE	1.0	ND
BENZO(A)ANTHRACENE	1.0	ND
CHRYSENE	1.0	NDT
BENZO(B) FLUORANTHENE	1.0	ND
BENZO(K) FLUORANTHENE	1.0	ND 🗇
BENZO(A) PYRENE	1.0	ND T
DIBENZO(A, H) ANTHRACENE/	1.0	ND "
INDENO(1,2,3-CD)PYRENE **	1.0	ND T
BENZO(G, H, I) PERYLENE	1.0	ND 📆

#### OA/OC SURROGATE RECOVERIES

2-FLUOROBIPHENYL	105.7%
p-TERPHENYL	106.6%

ND = NONE DETECTED ABOVE QUANTITATION LIMIT

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS

** = THESE COMPOUNDS COELUTE (AS INDICATED IN METHOD 610).



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#### ANALYTICAL REPORT

ENGINEERING-SCIENCE INC. 57 EXECUTIVE PARK SOUTH ATLANTA, GA 30329 REPORT: 8803

**REPORT DATE: 03/16/92** 

SWLO IDENTIFICATION

SAMPLE NO.: 8803.01-8803.05

DATE RECEIVED: 02/21/92

QA/QC

DESCRIPTION PARAMETER RESULTS

METHOD BLANK 03/04/92 LEAD < 3.0 ug/L

BLANK SPIKE 03/04/92 LEAD 96% RECOVERY



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8803a

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-19-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER
SWLO #: METHOD BLANK
DATE ANALYZED: 02-24-92
METHOD REFERENCE: EPA 601

PROJECT: AT 510 SAMPLE ID: BLANK

RESULTS REPORTED IN ug/L OR Parts Per Billion (PPB)

HALOGENATED VOLATILES

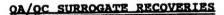
DET.. LIMIT

RESULTS

1,2-DICHLOROETHANE

1.0

ND



CIS-1,2-DICHLOROETHENE (65%-135%) 94%

ND = NOT DETECTED ABOVE QUANTITATION LIMIT

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS

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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8803b

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER SWLO # 8803 (MS/MSD)

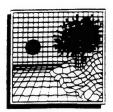
DATE ANALYZED : 02-24-92 METHOD REFERENCE: EPA 601

PROJECT: AT 510

SAMPLE ID: CONFIDENTIAL ID

#### HALOGENATED VOLATILES MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

				MSD CONC.		PERCENT
COMPOUND	(ug/L) (ug/L)	(ug/L)	RECOVERY	(na/r)	MSD	
1,2-DICHLOROETHANE	20.0 0	17.2	86.0	18.4	92.0	6.7



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8803c

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER
SWLO #: METHOD BLANK
METHOD REFERENCE: EPA 602
DATE ANALYZED: 02-21-92

PROJECT: AT 510 SAMPLE ID: BLANK

PARAMETER	LIMIT.	UNIT	RESULTS
GAS CHROMATOGRAPHY			
BENZENE	1.0	ug/L	ND
TOLUENE ETHYLBENZENE	1.0	ug/L ug/L	ND ND
XYLENES	1.0	ug/L ug/L	ND ND
MTBE	10.0	ug/ L	ND
	OA/OC SURROG	ATE RECOVERIES	

4-BROMOFLUOROBENZENE (65-135%)

86%

RECTIONS

ND = NOT DETECTED ABOVE QUANTITATION LIMIT

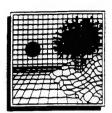
B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RERUN.

SW = TEST METHODS FOR EVALUATING SOLID WASTE, EPA PUBLICATION #SW846, THIRD

EDITION, NOVEMBER 1986



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REPORT: 8803d

DATE: 03-20-92

CLIENT: ENGINEERING SCIENCE, INC.

57 EXECUTIVE PARK SOUTH, SUITE 590

ATLANTA, GA 30329

ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER
DATE ANALYZED: 02-21-92
SWLO #: 8803 (MS/MSD)

PROJECT: AT 510

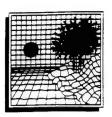
SAMPLE ID: CONFIDENTIAL ID

# BTEX MATRIX SPIKE/MATRIX SPIKE DUPLICATE

	SPIKE CONC. (ug/L)	SAMPLE CONC. (ug/L)	MATRIX SPIKE CONC. (ug/L)	PERCENT RECOVERY	
	10.0	0	9.9	99.3%	
BENZENE TOLUENE	10.0 10.0	0	9.3	93.1%	
ETHYLBENZENE	10.0	ō	9.4	94.4%	
TOTAL XYLENES	<i>***</i> •• •	0	29.4	98.1%	
MTBE	40.0	0	44.6	111.5%	

	MATRIX SPIKE DUP NSD CONC. (ug/L)	PERCENT REC. (ug/L)	RECOVERY PERCENT DIFFERENCE	
BENZENE TOLUENE ETHYLBENZENE TOTAL XYLENES MTBE	10.1 9.5 9.8 30.4 42.4	100.9% 95.4% 98.0% 101.3% 106.0%	1.60% 2.44% 3.74% 3.21% 5.1%	

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CLIENT: ENGINEERING SCIENCE, INC.

57 EXECUTIVE PARK SOUTH, SUITE 590

ATLANTA, GA 30329 ATTN: OLA AWOSIKA REPORT: 8803e

DATE: 03-20-92

SAMPLE MATRIX: WATER SWLO #: METHOD BLANK

METHOD REFERENCE: EPA 504.1
DATE EXTRACTED: 02-24-92
DATE ANALYZED: 02-24-92

PROJECT: AT 510

RESULTS REPORTED IN ug/L or PARTS PER BILLION

DET.

PARAMETER LIMET RESULT

ETHYLENE DIBROMIDE 0.01

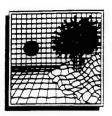
ND

QA/OC SURROGATE RECOVERY

1,1,2,2-TETRACHLOROETHANE 103%

ND = NOT DETECTED ABOVE QUANTITATION LIMIT

EPA = #EPA600/4-79-020, MARCH 1985 SM = STANDARD METHOD, 16TH EDITION R. R. C. L. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B. L. B.



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8803f

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329

ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER
SWLO #: METHOD BLANK
DATE EXTRACTED: 02-28-92
DATE ANALYZED: 03-19-92
METHOD REFERENCE: EPA 610

PROJECT: AT 510

SAMPLE ID: METHOD WATER BLANK 022892-01

RESULTS REPORTED IN ug/l DR Parts Per Billion (PPB)

2.		
POLYNUCLEAR AROMATIC HYDROCARBONS DET	ECTION LIMIT	RESULTS
NAPHTHALENE	2.9	ND
ACENAPHTHYLENE	3.7	ND
ACENAPHTHENE	4.5	ND
FLUORENE	0.3	ND
PHENANTHRENE	1.0	ND
ANTHRACENE	1.1	ND
FLUORANTHENE	0.3	ND
PYRENE	0.5	ND
BENZO(A)ANTHRACENE	0.02	ND
CHRYSENE	0.2	ND
BENZO(B)FLUORANTEENE	0.03	ND
BENZO(K) FLUORANTHENE	0.03	ND
BENZO(A) PYRENE	0.03	ND
DIBENZO(A,H)ANTHRACENE/	0.05	ND
INDENO(1,2,3-CD)PYRENE **	0.08	ND
BENZO(G,H,I)PERYLENE	0.13	ND
, , , , ,		

#### OA/OC SURROGATE RECOVERIES

2-FLUOROBIPHENYL	50%
p-TERPHENYL	43%

ND = NONE DETECTED ABOVE QUANTITATION LIMIT

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

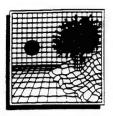
* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS

** = THESE COMPOUNDS COELUTE (AS INDICATED IN METHOD 610).

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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8803g

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329

ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER SWLO #: METHOD BLANK

DATE EXTRACTED: 02-28-92 DATE ANALYZED: 03-06-92 METHOD REFERENCE: EPA 610

PROJECT: AT 510

SAMPLE ID: WBLK022892-01

RESULTS REPORTED IN ug/L OR Parts Per Billion (PPB)

POLYNUCLEAR AROMATIC HYDROCARBONS DETECTION	N LIMIT RESULTS
NAPHTHALENE 1.0	ND
ACENAPHTHYLENE 1.0	ND
ACENAPHTHENE 1.0	ND
FLUORENE 1.0	ND
PHENANTHRENE 1.0	ND
ANTHRACENE 1.0	ND
FLUORANTHENE 1.0	ND
PYRENE 1.0	ND
BENZO(A)ANTHRACENE 1.0	ND
CHRYSENE 1.0	ND
BENZO(B)FLUORANTHENE 1.0	ND
BENZO(K) FLUORANTHENE 1.0	ND
BENZO(A) PYRENE 1.0	ND
DIBENZO(A, H) ANTHRACENE/ 1.0	ND
INDENO(1,2,3-CD)PYRENE ** 1.0	ND
BENZO(G,H,I)PERYLENE 1.0	ND

#### OA/OC SURROGATE RECOVERIES

90.7% 2-FLUOROBIPHENYL 78.6% p-TERPHENYL

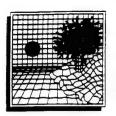
ND = NONE DETECTED ABOVE QUANTITATION LIMIT

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS

** = THESE COMPOUNDS COELUTE (AS INDICATED IN METHOD 610).



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CLIENT: ENGINEERING SCIENCE, INC.

57 EXECUTIVE PARK SOUTH, SUITE 590

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER
SWLO #: 8803 (MS/MSD)
DATE EXTRACTED: 02-28-92
DATE ANALYZED: 03-06-92

PROJECT: AT 510

SAMPLE ID: CONFIDENTIAL ID

REPORT: 8803h

DATE: 03-20-92

#### WATER PAH MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

	SPIKE	AMT FOUND	ANT FOUND	MS	AMT FOUND	PERCENT	
	ADDED	SAMPLE	148	PERCENT	MSD	RECOVERY	
COMPOUND	(ug/1)	(ug/1)	(ug/1)	RECOVERY	(ug/1)	MSD	RPD
NAPTHALENE	10.0	0	7.6	76.2	10.6	106.2	33.0
ACENAPTHYLENE	10.0	0	7.9	79.0	10.8	108.0	30.9
ACENAPTHENE	10.0	Ø	7.9	78.8	10.8	107.9	31.1
FLUORENE	10.0	0	8.6	85.9	11.9	119.4	32.6
PHENANTHRENE	10.0	0	8.6	86.4	12.1	121.2	33.6
ANTHRACENE	10.0	Q	8.7	87.4	11.9	118.5	30.3
FLUORANTHENE	10.0	.0	8.4	84.1	11.5	115.4	31.4
PYRENE	10.0	0	8.4	84.2	11.7	117.4	32.9
BENZO-(A)-ANTHRANCENE	10.0	0	7.5	75.2	9.9	99.1	27.5
CHRYSENE	10.0	0	7.0	70.1	9.3	93.4	28.5
BENZO-(B)-FLUORANTHENE	10.0	0	8.1	81.1	10.8	107.7	28.2
BENZO-(K)-FLUORANTHENE	10.0	0	8.4	84.2	11.3	113.2	29.4
BENZO-(A)-PYRENE	10.0	0	8.4	84.2	11.1	110.6	27.1
DIBENZO(A, H) ANTHRACENE,		0	8.3	41.3	11.7	58.5	34.5
INDENO(1,2,3-CD)PYREN		-		A 7			
BENZO(G,H,I)PERYLENE	10.0	0	8.4	83.9	12.0	119.5	35.1

#### OA/OC SURROGATE RECOVERIES

2-FLUOROBIPHENYL 76.7% 106.7% p-TERPHENYL 91.7% 110.0%

*VALUES OUTSIDE OF QC LIMITS



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8803i

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER

SWLO #: METHOD BLANK

DATE ANALYZED : 02-25-92

METHOD REFERENCE: EPA 418.1

PROJECT: AT 510

SAMPLE ID: WBLK02249201

RESULTS REPORTED IN mg/L OR Pages Per Billion (PPB)

PARAMETER

DET.. Limit

TPH

0.5 ND

RESULTS

ND = NOT DETECTED ABOVE QUANTITATION LIMIT

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS

A. E. C.



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8803k

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER
DATE ANALYZED: 02-25-92
SWLO #: 8803 (MS/MSD)

PROJECT: AT 510

SAMPLE ID: CONFIDENTIAL ID

#### TPH MATRIX SPIKE MATRIX SPIKE DUPLICATE

	SPIKE CONC. (ug/L)	SAMPLE CONC. (ug/L)	MATRIX SPIK CONC. (ug/L)	PERCENT RECOVERY	
ТРН	20.0	0	15.6	78.0%	
	MSD CONC. (mg/L)*	MSD PERCENT RECOVERY		Y PERCENT FERENCE	
TPH	16.0	80%		2.5%	

ARCHIO AND INC. AND INC.

ANALYTICAL DATA BATCH 8819

#### MEMORANDUM

March 30, 1992

To:

File

From:

J. A. Banton

Subject:

Eglin AFB, Job No. AT510.04

Data Review, UST Sites

Batch 8819

TPH (E418.1) analyses met QA/QC criteria for holding times, blanks, and matrix spike/matrix spike duplicate.

BETX and MTBE (E602) analyses met QA/QC criteria for holding times, blanks, matrix spike/matrix spike duplicate, and surrogate recoveries. Benzene results failed to meet USAF maximum allowable detection limits; however, the detection limits did meet Florida petroleum contamination site clean-up criteria maximum allowable detection limits.

EDB (E504) analyses met QA/QC criteria for holding times, LCS, matrix spike/matrix spike duplicate, and surrogate recoveries.

Lead analyses met QA/QC criteria for holding times and matrix spike/matrix spike duplicates.

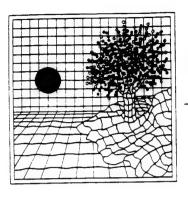
1,2-DCE (E601) analyses met QA/QC criteria for holding times, blanks, matrix spike/spike matrix duplicate, and surrogate recoveries.

PAH (E610) analyses met criteria for holding times, blanks, and surrogate recoveries.

ENGINEERING-SCIENCE, INC.

J. A. Banton

Chemist, ES Atlanta



March 20, 1992

Ola Awosika
ENGINEERING SCIENCE, INC.
57 Executive Park South, Suite 590
Atlanta, GA 30329

Project: AT 510 SWLO Episode #: 8819.01 - 8819.02

Dear Mr. Awosika:

Enclosed we are submitting the analytical results for your samples received in our laboratory on February 22, 1992 for the above-captioned project.

If, in your review, you should have any questions or require additional information, please call.

Sincerely,

Del Altert

Daryl Alstatt Project Officer

DA/rb

Enclosures

# ENGINEERING-SCIENCE CHAIN OF CUSTODY RECORD

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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8819.01 - .02HV

57 EXECUTIVE PARK SOUTH, SUITE 590

ATLANTA, GA 30329 ATTN: OLA AWOSIKA DATE: 03-19-92

SAMPLE MATRIX: WATER
SWLO #: 8819.01 - .02
DATE SUBMITTED: 02-22-92
DATE ANALYZED: 02-26-92

PROJECT: AT 510

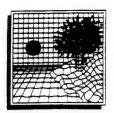
METHOD REFERENCE FOR 1,2-DICHLOROETHAME: EPA 601

		SWLO	DET.		
CLIENT ID		I.D	LIMIT	UNIT	RESULT
MW9990-1		8819.01 .	1.0	ug/L	ND
UST-TB3 TRIP	BLANK	8819 <b>.0</b> 2	1.0	ug/L	ND



ND = NOT DETECTED ABOVE QUANTITATION LIMIT

EPA = #EPA600/4-79-020, MARCH 1985 SM = STANDARD METHOD, 16TH EDITION



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8819.01 - .02HVS

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

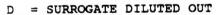
SWLO # 8819

METHOD REFERENCE: EPA 601

PROJECT: AT 510

#### HALOGENATED VOLATILE QA/QC SURROGATE RECOVERIES

SAMPLE I.D.	COMPOUND	PERCENT RECOVERY
8819.01	CIS-1,2-DICHLOROETHENE	96%
8819.02	CIS-1,2-DICHLOROETHENE	94%



J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS

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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8819.01 - .02EDB

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER SWLO #: 8819.01 - .02

METHOD REFERENCE: EPA 504.1

DATE SUBMITTED: 02-22-92

DATE EXTRACTED: 02-24-92

DATE ANALYZED: 02-25-92

PROJECT: AT 510

RESULTS REPORTED IN ug/L or PARTS PER BILLION

#### ETHYLENE DIBROMIDE

	SWLO	DET.	
CLIENT ID	I.D	LIMIT	RESULTS
MW99 <del>9</del> 0-1	8819.01	0.01	ND
MW91601-1	8819.02	0.01	ND

ND = NOT DETECTED ABOVE QUANTITATION LIMIT

EPA = #EPA600/4-79-020, MARCH 1985 SM = STANDARD METHOD, 16TH EDITION



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CLIENT: ENGINEERING SCIENCE, INC.

**REPORT:** 8819.01 - .02EDBSR

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SWLO # 8819

METHOD REFERENCE: EPA 504.1

PROJECT: AT 510

#### ETHYLENE DIBROMIDE QA/QC SURROGATE RECOVERIES

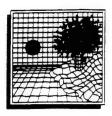
SAMPLE I.D.	COMPOUND	PERCENT RECOVERY
8819.01	1,1,2,2-TETRACHLOROETHANE	109%
8819.02	1,1,2,2-TETRACHLOROETHANE 1,1,2,2-TETRACHLOROETHANE	112%



J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

^{* =} SURROGATE RECOVERY OUTSIDE OF QC LIMITS



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8819.01TPH

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER

SWLO #: 8819.01

DATE SUBMITTED: 02-22-92
DATE ANALYZED: 03-04-92

PROJECT: AT 510

METHOD REFERENCE FOR TOTAL PETROLEUM HYDROCARBON: EPA 418.1

	SWLO DET.		
CLIENT ID	I.D LIMIT	UNIT	RESULT
MW9990-1	8819.01 1.0	mg/L	1.6

ND = NOT DETECTED ABOVE QUANTITATION LIMIT

EPA = #EPA600/4-79-020, MARCH 1985 SM = STANDARD METHOD, 16TH EDITION A TOTAL STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF T



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CLIENT: ENGINEERING SCIENCE, INC.

57 EXECUTIVE PARK SOUTH, SUITE 590

ATLANTA, GA 30329 ATTN: OLA AWOSIKA REPORT: 8819.01LD

DATE: 03-20-92

SAMPLE MATRIX: WATER

SWLO #: 8819.01

DATE SUBMITTED: 02-22-92
DATE ANALYZED: 03-04-92

PROJECT: AT 510

METHOD REFERENCE FOR LEAD: EPA 239.2

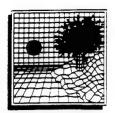
SWLO DET.

CLIENT ID I.D LIMIT UNIT RESULT

MW9990-1 8819.01 3.0 ug/L ND

ND = NOT DETECTED ABOVE QUANTITATION LIMIT

EPA = #EPA600/4-79-020, MARCH 1985 SM = STANDARD METHOD, 16TH EDITION



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8819.01BX

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER

SWLO #: 8819.01

METHOD REFERENCE: EPA 602
DATE SAMPLED : 02-21-92
DATE SUBMITTED: 02-22-92
DATE ANALYZED: 02-25-92

PROJECT: AT 510 SAMPLE ID: MW9990-1

PARAMETER		det. Limit		UNIT	RESULTS
GAS CHROMATO	GRAPHY		*		
BENZENE		1.0		ug/L	ND
TOLUENE		1.0		ug/L	ND
ETHYLBENZENE	1	1.0		ug/L	ND ND
XYLENES MTBE		1.0		ug/L ug/L	ND

#### OA/OC SURROGATE RECOVERIES

4-BROMOFLUOROBENZENE (65-135%)

79%

HEER

ND = NOT DETECTED ABOVE QUANTITATION LIMIT

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RERUN.

SW = TEST METHODS FOR EVALUATING SOLID WASTE, EPA PUBLICATION #SW846, THIRD EDITION, NOVEMBER 1986



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8819.01P

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329

ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER

SWLO #: 8819.01

DATE SUBMITTED: 02-22-92
DATE EXTRACTED: 02-28-92
DATE ANALYZED: 03-06-92
METHOD REFERENCE: EPA 610

PROJECT: AT 510 SAMPLE ID: MW9990-1

RESULTS REPORTED IN ug/1 OR Parts Per Billion (PPB)

POLYNUCLEAR AROMATIC HYDROCAPHONS	DETECTION LIMIT	RESULTS
NAPHTHALENE	1.0	ND
ACENAPHTHYLENE	1.0	ND
ACENAPHTHENE	1.0	ND
FLUORENE	1.0	ND
PHENANTHRENE	1.0	ND
ANTHRACENE	1.0	ND
FLUORANTHENE	1.0	ND
PYRENE	1.0	ND
BENZO(A) ANTHRACENE	1.0	ND
CHRYSENE	1.0	ND
BENZO(B) FLUORANTHENE	1.0	ND
BENZO(K)FLUORANTHENE	1.0	ND
BENZO(A) PYRENE	1.0	ND
DIBENZO(A, H) ANTHRACENE/	1.0	ND
INDENO(1,2,3-CD)PYRENE **	1.0	ND
BENZO(G,H,I)PERYLENE	1.0	ND

#### OA/OC SURROGATE RECOVERIES

102.0%

2-FLUOROBIPHENYL p-TERPHENYL

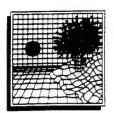
ND = NONE DETECTED ABOVE QUANTITATION LIMIT

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS

** = THESE COMPOUNDS COELUTE (AS INDICATED IN METHOD 610).



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8819.02BX

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER

SWLO #: 8819.02

METHOD REFERENCE: EPA 602
DATE SAMPLED : 02-21-92
DATE SUBMITTED: 02-22-92
DATE ANALYZED: 02-25-92

PROJECT: AT 510

SAMPLE ID: UST-TB3 TRIP BLANK

PARAMETER	DET. LIMES	UNIT	RESULTS
GAS CHROMATOG	RAPHY	*	
BENZENE	1.0	ug/L	ND
TOLUENE ETHYLBENZENE	1.0	ug/L ug/L	ND ND
XYLENES MTBE	1.0	ug/L ug/L	ND ND
MIDE			

#### OA/OC SURROGATE RECOVERIES

4-BROMOFLUOROBENZENE (65-135%)

90%

ND = NOT DETECTED ABOVE QUANTITATION LIMIT

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RERUN.

SW = TEST METHODS FOR EVALUATING SOLID WASTE, EPA PUBLICATION #SW846, THIRD EDITION, NOVEMBER 1986

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#### ANALYTICAL REPORT

ENGINEERING-SCIENCE INC. 57 EXECUTIVE PARK SOUTH ATLANTA, GA 30329 REPORT: 8819

REPORT DATE: 03/16/92

SWLO IDENTIFICATION

SAMPLE NO.:

8819.01-8819.02

DATE RECEIVED: 02/22/92

QA/QC

DESCRIPTION

PARAMETER

RESULTS

METHOD BLANK

03/04/92

LEAD

< 3.0 ug/L

BLANK SPIKE

03/04/92

LEAD

96% RECOVERY



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8819a

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER
SWLO #: METHOD BLANK

DATE ANALYZED: 02-26-92 METHOD REFERENCE: EPA 601

PROJECT: AT 510
SAMPLE ID: BLANK

RESULTS REPORTED IN ug/L OR Parts Per Billion (PPB)

HALOGENATED VOLATILES

DET .. Linit

RESULTS

1,2-DICHLOROETHANE

1.0

ND

#### OA/OC SURROGATE RECOVERIES

CIS-1,2-DICHLOROETHENE (65%-135%) 107%

ND = NOT DETECTED ABOVE QUANTITATION LIMIT

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS



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CLIENT: ENGINEERING SCIENCE, INC.

57 EXECUTIVE PARK SOUTH, SUITE 590

ATLANTA, GA 30329 ATTN: OLA AWOSIKA DATE: 03-20-92

REPORT: 8819b

SAMPLE MATRIX: WATER

SWLO # 8819 (MS/MSD)
DATE ANALYZED : 02-26-92
METHOD REFERENCE: EPA 601

PROJECT: AT 510

SAMPLE ID: CONFIDENTIAL ID

#### HALOGENATED VOLATILES MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

	SPIKE	SAMPLE		MS	AMT FOUND	PERCENT	
	come.	CONC.	MS CONC.	PERCENT	MSD CONC.	RECOVERY	PERCENT
COMPOUND	(ug/L)	(ug/L)	(ug/L)	RECOVERY	(ug/L)	MSD	RPD
1,2-DICHLOROETHANE	20.0	0	20.1	100.5	20.5	102.5	2.0



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8819c

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER
SWLO #: METHOD BLANK
METHOD REFERENCE: EPA 602
DATE ANALYZED: 02-25-92

PROJECT: AT 510
SAMPLE ID: BLANK

PARAMETER		DET. LIMIT	UNIT	RESULTS
GAS CHROMATOG	RAPHY			
BENZENE TOLUENE ETHYLBENZENE XYLENES MTBE		1.0 1.0 1.0 1.0 1.0	ug/L ug/L ug/L ug/L ug/L	ND ND ND ND
		OA/OC SURRO	GATE RECOVERIES	

ND = NOT DETECTED ABOVE QUANTITATION LIMIT

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RERUN.

SW = TEST METHODS FOR EVALUATING SOLID WASTE, EPA PUBLICATION #SW846, THIRD EDITION, NOVEMBER 1986

4-BROMOFLUOROBENZENE (65-135%)



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8819d

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER
DATE ANALYZED: 02-25-92
SWLO #: 8819 (MS/MSD)

PROJECT: AT 510

SAMPLE ID: CONFIDENTIAL ID

#### BTEX MATRIX SPIES/MATRIX SPIKE DEPLICATE

	SPIKE CONC.	SAMPLE CONC.	MATRIX SPIKE CONC. (ug/L)	PERCENT RECOVERY
	10.0	0	9.8	98.4%
BENZENE TOLUENE	10.0	o.	9.0	89.5%
ETHYLBENZENE	10.0	6	9.3	93.3%
TOTAL XYLENES	<i>2</i> 00	0	29.1	97.0%
MTBE	30.0 40.0	0	36.0	90.0%

	MATRIX SPIKE DUP NSD CONC. (ug/L)	PERCENT REC. (ug/L)	RECOVERY PERCENT DIFFERENCE	
BENZENE	10.6	106.3%	7.72%	
TOLUENE	9.1	90.8%	1.43%	
ETHYLBENZENE	9.4	93.9%	0.64%	
TOTAL XYLENES	29.4	97.9%	0.92%	
MTBE	43.1	107.8%	18.0%	
			^	



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8819e

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER SWLO #: METHOD BLANK

METHOD REFERENCE: EPA 504.1
DATE EXTRACTED: 02-24-92
DATE ANALYZED: 02-24-92

PROJECT: AT 510

RESULTS REPORTED IN ug/L or PARTS PER BILLION

DET

PARAMETER

LIMIT RESULT

ETHYLENE DIBROMIDE

0.01

ND

OA/OC SURROGATE RECOVERY

1,1,2,2-TETRACHLOROETHANE 103%

ND = NOT DETECTED ABOVE QUANTITATION LIMIT

EPA = #EPA600/4-79-020, MARCH 1985 SM = STANDARD METHOD, 16TH EDITION



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8819f

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER
SWLO #: METHOD BLANK
DATE EXTRACTED: 02-28-92
DATE ANALYZED: 03-06-92
METHOD REFERENCE: EPA 610

PROJECT: AT 510

SAMPLE ID: WBLK022892-01

RESULTS REPORTED IN ug/l OR Parts Per Billion (PPB)

POLYNUCLEAR AROMATIC HYDROCARBONS	DETECTION LIMIT	RESULTS
NAPHTHALENE	1.0	ND
ACENAPHTHYLENE	1.0	ND
ACENAPHTHENE	1.0	ND
FLUORENE	1.0	ND
PHENANTHRENE	1.0	ND
ANTHRACENE	1.0	ND
FLUORANTHENE	1.0	ND
PYRENE	1.0	ND
BENZO(A)ANTHRACENE	1.0	ND
CHRYSENE	1.0	ND
BENZO(B)FLUORANTHENE	1.0	ND
BENZO(K) FLUORANTHENE	1.0	ND
BENZO(A) PYRENE	1.0	ND
DIBENZO(A,H)ANTHRACENE/	1.0	ND
INDENO(1,2,3-CD)PYRENE **	1.0	ND
BENZO(G, H, I) PERYLENE	1.0	ND
• • •		

#### OA/OC SURROGATE RECOVERIES

2-FLUOROBIPHENYL

90.7%

p-TERPHENYL

78.6%

ND = NONE DETECTED ABOVE QUANTITATION LIMIT

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS

** = THESE COMPOUNDS COELUTE (AS INDICATED IN METHOD 610).



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8819g

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER
SWLO #: 8819 (MS/MSD)
DATE EXTRACTED: 02-28-92
DATE ANALYZED: 03-06-92

PROJECT: AT 510

SAMPLE ID: CONFIDENTIAL ID

#### WATER PAH MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

	SPIKE	AMT FOUND	AMT FOUND	MS	AMT FOUND	PERCENT	
	ADDED	Sample	MS	PERCENT	MSD	RECOVERY	PERCENT
COMPOUND	(ug/1)	(ug/1)	(ug/1)	RECOVERY	(ug/1)	MSD	RPD
NAPTHALENE	10.0	0	7.5	76.2	10.6	106.2	33.0
ACENAPTHYLENE	10.0	O.	7.9	79.0	10.8	108.0	30.9
ACENAPTHENE	10.0	<b>o</b>	7.9	₹78.8	10.8	107.9	31.1
FLUORENE	10.0	0	8.6	85.9	11.9	119.4	32.6
PHENANTHRENE	10.0	O _C	8.6	86.4	12.1	121.2	33.6
ANTHRACENE	10.0	0	8.7	87.4	11.9	118.5	30.3
FLUORANTHENE	10.0	O	8.4	84.1	11.5	115.4	31.4
PYRENE	10.0	0	8.4	84.2	11.7	117.4	32.9
BENZO-(A)-ANTHRANCENE	10.0	0	7.5	75.2	9.9	99.1	27.5
CHRYSENE	10.0	0	7.0	70.1	9.3	93.4	28.5
BENZO-(B)-FLUORANTHENE	10.0	0	8.1	81.1	10.8	107.7	28.2
BENZO-(K)-FLUORANTHENE	10.0	0	8.4	84.2	11.3	113.2	29.4
BENZO-(A)-PYRENE	10.0	0	8.4	84.2	11.1	110.6	27.1
DIBENZO(A, H) ANTHRACENE/	20.0	0	8.3	41.3	11.7	58.5	34.5
INDENO(1,2,3-CD)PYREN						2	
BENZO(G,H,I)PERYLENE	10.0	0	8.4	83.9	12.0	119.5	35.1

QA/OC SURROGATE RECOVERIES

*VALUES OUTSIDE OF QC LIMITS

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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8819h

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER
SWLO #: METHOD BLANK
DATE ANALYZED : 03-04-92
METHOD REFERENCE: EPA 418.1

PROJECT: AT 510

SAMPLE ID: WBLK03039201

RESULTS REPORTED IN mg/L OR Parts Per Billion (PPB)

DET. LIMIT

PARAMETER

RESULTS

TPH

0.5 ND

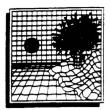
ND = NOT DETECTED ABOVE QUANTITATION LIMIT

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS

RECEIVED TO THE



TPH

### SOUTHWEST LABORATORY OF OKLAHOMA, INC.

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CLIENT: ENGINEERING SCIENCE, INC.

57 EXECUTIVE PARK SOUTH, SUITE 590

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER
DATE ANALYZED: 03-04-92
SWLO #: 8819 (MS/MSD)

PROJECT: AT 510

SAMPLE ID: CONFIDENTIAL ID

REPORT: 8819i

DATE: 03-20-92

TPH MATRIX SPIKE MATRIX SPIKE DUPLICATE

SPIKE CONC. SAMPLE CONC. CONC. PERCENT
(ug/L) (ug/L) (ug/L) RECOVERY

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CLIENT: ENGINEERING SCIENCE, INC.

57 EXECUTIVE PARK SOUTH, SUITE 590

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

TRANSPORT TO THE OWN

SAMPLE MATRIX: WATER
DATE ANALYZED: 03-04-92
SWLO #: 8819 (MS/MSD)

PROJECT: AT 510

SAMPLE ID: CONFIDENTIAL ID

REPORT: 8819i

DATE: 03-20-92

#### TPH MATRIX SPIKE/MATRIX SPIKE DUPLICATE

	SPIKE CONC. (ug/L)	SAMPLE CONC. (ug/L)	MATRIX SPIK CONC. (ug/L)	PERCENT RECOVERY	
ТРН	20.0	0	15.2	76.0%	
	MSD CONC. (ug/1)*	MSD PERCENT RECOVERY		RY PERCENT FERENCE	
TPH	16.0	80%	2	2.5%	